

AMERICAN JOURNAL OF PHOTOGRAPHY

THOS. H. McCOLLIN, Managing Editor.

JULIUS F. SACHSE, Editor.

VOL. XV.

DECEMBER, 1894.

No. 180.

COMMERCIAL PHOTOGRAPHY.

IN our last issue we published a paper on "Industrial Photography," showing how largely the photographic processes entered into our great industrial manufacturing and mercantile enterprises. It will be noticed that this particular branch of the art-science is entirely distinct from commercial photography, where the term is used in its proper and not in the accepted sense.

The term commercial work is usually applied to classes of subjects that really come under the head of industrial or mercantile photography.

In the consideration of commercial photography in the present instance, we shall treat it in its true aspect, viz.: Photographic products that are made in quantities, to be vended and sold the same as any other merchandise.

The manufacture, so to speak, of photographs in bulk, as it were, has assumed proportions so great that but few persons, outside of the comparatively few who are immediately interested, have any conception of its magnitude.

Great establishments have sprung up, mainly in Germany, to fill the demand for photographs of special subjects, in some cases employing hundreds of hands to fill their orders, that come from all parts of the world.

The production of silver prints being naturally a slow process, and one depending upon the state of the weather as well as upon the technical knowledge of the employees through whose departments they pass, has caused the enterprising principals to seek for methods that would be more rapid and uniform in the results than could be obtained by the old and uncertain processes.

The result of these investigations, in addition to a growing demand, has been the development of new mechanical processes, by which silver prints are imitated so closely that even experts, —practical professional photographers,—who have not been let into the secret, are apt to declare that the submitted proofs are merely fine prints of the *solio* or *aristo* order.

These counterfeit silver prints are known in Germany under the trade name of "*Lichtdruck*," a process that is now applied to almost any and every subject as soon as the demand warrants the production in large quantities.

A number of large firms in Germany are employed in making "*Lichtdruck*:" some of these establishments employ hundreds of hands and scores of presses, and turn out the finest work. Among the subjects that come under this head are the local views—architectural and scenic—that are sold all over Europe. Many a tourist who buys an assortment of souvenir photographs, as he thinks, in reality has a lot of fine specimens of German ingenuity, known as "*Lichtdruck*," which were sold to him at the full price of an *albumen* silver print. There is this thing, however, about the transaction,—the permanency of the prints may be depended upon,—there is no danger of *hypo* and imperfect washing. In this respect the purchaser is certainly the gainer.

Of above special class of subjects there are tens of thousands of prints sold annually during the tourist season, in addition to the large number of silver prints that are made by individual local photographers. In the majority of cases that came under the writer's notice, where specimens of both orders were compared side by side, the odds were most always in favor of the mechanical counterfeit.

Representative specimens of this class of work may be seen in the *Jahrbuch für Photographie und Reproduktionstechnik* for 1894,

by Dr. Josef Maria Eder. Special attention is called to the closeness with which the old silver print and aristotype is imitated by these mechanical processes. Take the cabinet portrait by Schaarwächter, of Berlin, reproduced in "Lichtdruck" by Sinsel & Co., of Leipzig, or the portrait study of the Vienna Institute, reproduced by Stengel & Markert, in Dresden; compare them with the average aristo or albumen print, and note how much better the mechanical prints are in tone and clearness of the shadows. At the same time it must be conceded that this process is only applicable to subjects where large quantities are wanted, therefore the new mechanical reproduction process does not enter into competition with the regular professional photographer.

Another field that is open to the new process is the production of landscapes and scenic subjects in the colors of nature; again referring to Dr. Eder's *Jahrbuch* a specimen of this advanced work is contributed by the firm of Wilhelm Hoffman, of Dresden. It represents an old Abbey ruin on the Oybin, in Saxony. The print is from a direct negative reproduced in "Lichtdruck" in natural colors.

This process is a commercial success and is entirely foreign to the three-color super-imposition process, as it partakes more of a photo-lithographic nature, zinc plates, however, replacing the porous stone generally used.

There are several firms in Dresden and Leipzig who now devote their energies to the reproduction of views in the colors of nature by this process. The prints are produced in any quantity, of equal uniformity of tone and color, and are used for book illustrations as well as for regular sale.

Stereoscopic photographs are also produced in large quantities, and sold as merchandise by several firms in Europe, who make a specialty of the particular branch. These views are still made by the old photographic processes,—at least we have never heard of or seen any that were reproduced by "Lichtdruck." This is perhaps on account of the limited demand for any one subject.

The most important branch of commercial photography in Europe, and one where the products are still entirely photo-

graphic, is the reproduction of paintings and masterpieces in the various art museums. The prints in this case are either carefully printed albumen or carbon prints, and are virtually works of art, that are known and appreciated by the connoisseur and art lover in all parts of the world. The bulk of this special branch of commercial photography is mainly controlled by two establishments in Germany. The names of Franz Hanfstängel, of Munich, and Braun, of Alsace, are household words with all art students. This special subject, which is really art photography, will be treated in a separate paper.

Returning to our own country, the most extended branch of commercial photography, so far as the writer can learn, is the reproduction of portraits of stage celebrities, usually females of the variety or concert-saloon type, clad in scanty attire.

These small photographs are used as premiums by venders of cigarettes and chewing tobacco, and although the gross figures are not attainable, it is stated upon good authority that the business has assumed vast proportions in the number of prints annually produced and given away.

JULIUS F. SACHSE.

A Sensitive Barometer.—The *Revista Scientifica Industriale* gives the following description of a new barometer of extreme sensitiveness for use in coal mines. It consists of a vertical tube 20 millimeters in diameter internally, and about a meter in length, curved in the usual manner at the bottom. The free extremity is closed by a steel plug screwed into an iron collar fixed to the tube. Finally, a long capillary tube a millimeter in diameter is placed at right angles upon the large tube a short distance above the curved part, and terminates in an open receptacle. The quantity of mercury is so regulated that the meniscus shall present itself toward the centre of the capillary tube. The slightest variation in atmospheric pressure causes the mercury to rise and act upon the capillary column, in which the variations, augmented in the ratio of the sections of the tubes, that is to say, of 1 to 400, which permits of the reading of differences of one four-hundredth. When the changes of pressure become great enough to carry the meniscus outside of the capillary tube, the matter is remedied by acting upon the steel plug.

PLATINOCHLORIDES.*

THE methods now in use for obtaining potassium platino-chloride are: 1. Heating platonic chloride to $250-300^{\circ}\text{C}$. and treating with potassium chloride. 2. Passing sulphurous acid through a boiling solution of platonic chloride and treating with potassium chloride. To these older methods Thomsen has added: 3. Treatment of potassium platinochloride with cuprous chloride.

All these have objections—with (1) it is not easy to obtain a uniform conversion. (2) requires to be very closely watched to catch the exact moment at which the change is complete. (3) is liable to a vexatious reverse action by which platinous salt is reconverted into platonic salt at the expense of the cupric chloride present. Thomsen mentions this danger as occurring in hot solutions. It probably depends, however, more on concentration than on temperature. The larger the proportion of cupric chloride present in any solution the greater the tendency to reversal. In one case a half-liter of mother water containing platinous salt was set aside for spontaneous evaporation. In a few days large crystals of the red salt began to form; in a few days more, instead of these increasing, there was not a crystal of the platinous salt left.

These objections led me to look for something different. I have found two methods, either of which gives good results.

First Method.—Potassium acid sulphite. Potassium platonic chloride is to be moderately heated with solution of the acid sulphite; convenient proportions are: platinum salt 12 grains, acid sulphite 9 grains, water 160 cc. The mixture can be placed over a hot-water bath in a covered vessel and left to itself. The reduction takes about ten to twelve hours, and is known to be complete when the solution has a pure red color free from yellow. The cover is then removed and the liquid evaporated to the crystallizing point.

* 1. Some new Methods of obtaining Platinochlorides. 2. Probable Existence of a Platinum Subchloride. By M. Carey Lea.

If, as may happen, the red chloride and the other salts crystallize out together, it is best to redissolve them by heat in a small quantity of water saturated with potassium chloride. The red salt then crystallizes out first.

Second Method—Alkaline Hypophosphites. By reason of its great reducing powers a very small proportion of alkaline hypophosphite is capable of converting the yellow platinum salt to the red; theoretically one part of hypophosphite should reduce nine or ten parts of platinum salt. We can hasten the operation somewhat by using an excess of hypophosphite, but must then work at a lower temperature. Both methods will be given.

In using an excess of hypophosphite, it is convenient to take 10 grams of platinum salt, 2 grams, or even more, of potassium hypophosphite, and 600 c.c. of water.

These are placed in a flask, and very gently heated. The best temperature is 66° to 70° C.

There is a very easy way of obtaining this temperature, and of keeping it perfectly constant for any length of time, by taking an ordinary water stove of the kind in which a chamber is surrounded on five sides by water. Such a stove is to be furnished with a Kekule constant level, regulated to keep the water jacket half full. If now the heat is turned on so as to keep the water gently boiling, it will be found that solutions placed on the top maintain a perfectly steady temperature, varying from 55° to 72° C., according to the shape of the vessel, but constant for any one shape. The lowest temperature, about 55° , is obtained with an open, flat porcelain basin. It rises gradually as the shape of the vessel tends more to check evaporation. When a little flask has about 2 inches of solution, the temperature will remain steady at about 66° , and this temperature is very suitable for the treatment just described.

Even with this excess of reducing agent 10 or 12 hours will be required. The solution must not be allowed to evaporate to less than one-half its original bulk.

The completion of the operation is known by the solution showing a perfectly pure ruby-red color. The slightest shade of orange indicates the presence of the yellow platinic salt. It

is much safer to allow the solution to evaporate spontaneously. If evaporated by heat there is always a chance that the reduction may go too far.

There is not much to choose between these two methods. The first, with acid sulphite, is the safest, because there is no danger of carrying it too far. On the other hand, in the second method the red salt separates more easily and completely in crystallizing.

On the whole, the method which I prefer is to keep down the hypophosphite, and use a higher temperature and longer heating. For this, a weighed quantity of platinum salt may be placed in a flask with 30 c.c. of water for each gram of the salt, and a quantity of potassium hypophosphite equal in weight to 1-9th of the platinum salt. The flask is to be placed in a water bath, which is kept at 80° to 90° C. In consequence of the small proportion of hypophosphite the action is slow, requiring about 10 or 20 hours for complete conversion. No attention during this time is required, and the advantages are that the solution becomes sufficiently concentrated to crystallize on cooling, and that the very small quantity of foreign matter introduced renders it easy to obtain a pure product.

At 100° C., the reduction to red salt takes place in about fifteen minutes. This method is practicable, but requires great circumspection. If the boiling is continued a little too long, the solution suddenly turns brown; the reduction has gone too far.

If a quick reduction is desired, it is better to use an acid sulphite as a reducing agent, and the following method gives satisfactory results.

In a flask is placed 300 c.c. of water, 24 grams of potassium platinic chloride, 12 grams each of potassium acid sulphite and potassium chloride. Sodium acid sulphite should not be used. The introduction of sodium salts interferes with the crystallization, not indeed with the first crop of crystals, but later. These are made to boil rapidly together for twenty-five minutes, reckoned from the time when actual boiling begins. The solution is allowed to cool, filtered if necessary, and placed in a large flat-bottomed glass or porcelain vessel. In a day or two the red salt will com-

mence to form large crystals. The addition of the potassium chloride causes the red salt to crystallize out first.

It has seemed worth while to give these methods in some detail because the red platinum salt is likely to find a constantly increasing use in photography, not only for platinum printing, but as a substitute for gold in toning.

There is no doubt that platinum is a much better metal for toning silver prints than gold. Its tones are better, and its action is much more reliable.

By all these methods this beautiful salt is obtained in fine ruby red prisms.

PROBABLE EXISTENCE OF A PLATINUM SUBCHLORIDE.

If in obtaining potassium platinochloride with the aid of a hypophosphite in excess, the heat is continued after complete conversion to the red salt, the solution in a few minutes changes from red to dark brown. The substance which gives the solution this dark brown color exhibits the following properties.

It is deliquescent and cannot be crystallized. There is no satisfactory method of separating it from the other substances in solution. An oxide of platinum appears to be precipitated by the addition of potash, and this precipitate when freshly made dissolves easily in hydrochloric acid, but if it is thrown on a filter and washed, almost the whole of it runs through. This difficulty it is true can be avoided by washing with a dilute solution of potassium chloride. But the precipitate after washing is no longer soluble in hydrochloric acid except that the acid dissolves out a little protoxide derived from the red salt, some of which is apt to escape reduction.

The brown solution exhibits the following reactions. Hydrochloric acid has no effect.

Nitric acid decolorizes it.

Potash produces a brown precipitate soluble in an excess of the precipitant.

Ammonia a brown precipitate insoluble in an excess.

The solution itself is opaque by reason of its intense color.

When largely diluted it is yellowish brown and perfectly transparent.

From the method of obtaining this substance there seem to be only two possible explanations of its nature. First, that it is metallic platinum in a state of solution; this is decisively negatived by the reactions just described. Second, that it is a chloride containing less chlorine than platinous chloride; therefore a sub-chloride. If the precipitate obtained by potash could after washing be dissolved in hydrochloric acid its constitution could easily be determined. But during the washing it seems to be converted into metallic platinum.

I have noticed that when a solution of the ruby red salt 2KCl , PtCl_2 , is spread on paper and exposed to sunlight it does not blacken, but assumes a yellowish-brown color; it would seem therefore that light acts upon it much in the same way as a hypophosphite, reducing it probably to a sub-chloride. If the reduction were to metallic platinum this would be shown by the production of an intense blackness.

In all this analogy with silver salts is unmistakable. Pure silver chloride is not reduced to metal by the action of light, for after exposure it yields nothing to nitric acid. Both metals seem to form chlorides, the oxides corresponding to which are unstable. —*The American Journal of Science.*

Making a Thermometer.—A thermometer is made in this wise: A small glass tube, blown into a bulb at one end, is partly filled with mercury; the mercury is boiled to expel the air and fill the tube with vapor, and the tube is then hermetically sealed and allowed to cool. The gradations are found as follows: The instrument is immersed in ice water, and the freezing point is found and marked. Then it is placed in water which is allowed to reach the boiling point, and so 212 degrees are found. The spans between are marked by mathematical calculations.—*Hardware.*

THE STABILITY OF THE ARISTOTYPE.

THE question whether the beautiful results to be obtained upon the various gelatino-chloride and collodio-chloride papers, that are now so extensively used at home and abroad, are permanent or merely ephemeral, has of late been agitated on both side of the ocean, and in some cases, at least on the negative side, with possibly more bias than knowledge or good judgment.

As the case stands most all manufacturers of this class of photographic papers advise and recommend for the final manipulation what is known as a "combined" toning and fixing bath. This is done nominally to attain maximum results, but as a matter of fact it is an advertisement to make it appear that their special product can be manipulated with one bath less than the old albumen paper, thereby saving time and money.

It is just here where the trouble comes in. In the struggle for trade that is going on at the present day, all manufacturers of photographic papers are naturally apt to throw out what seems to be the simplest formulæ as bait to catch all the trade they can, and interest both professional and amateur.

Now it is beyond a doubt that all the trouble about the instability of the aristotype is caused just by this identical combined bath, a labor-saving mixture that is not new by any means, as it dates back to the earliest days of photography, and was always a process in favor with the lazy photographer and Rule of Thumb operator.

Yet the manufacturers of the various papers, both gelatino and collodio-chloride, all recommend the combined bath, stating that it gives results as permanent as the separate toning and fixing bath, and many are the specimens shown that have stood the hardest ordeal that it was possible to subject a photographic print to, and were still brilliant, without showing any sign of fading or deterioration.

The question naturally arises, Why is this? Why does the print made by the papermaker seem stable and permanent, and put the same paper and chemicals into the hands of an every-day prac-

tical photographer, fade and become worthless? This is by no means a new question; the same query in regard to the combined versus separate baths was raised about thirty years ago, when the safety of the former was questioned with the same pertinacity that it is now. The conditions were precisely the same. Prints were shown that had stood for months without change, while others plainly showed deterioration after a few month's time.

The explanation of this trouble, it was argued by certain theorists and practical operators, was, either in the insufficient washing, or fixing of the prints; in other words, that the prints had either not been washed long enough, or they had toned before they were thoroughly fixed. Both of these theories, however, fell to the ground when it was shown that prints out of the same batch, that had been fixed and toned, and carefully washed at the same time, were some of them perfect after a lapse of time, while others soon faded and changed so as to be worthless.

If we mistake not it was left to M. Carey Lea, of Philadelphia, to solve the problem. He showed by careful and exhaustive experiment that if a combined bath was used fresh, say a few hours after mixing, and a very few prints were fixed in the bath, they were as permanent as any that were toned and fixed separately. But if used after standing, or if more than a very small number of prints be fixed in it, they were sulphur-toned, and speedily changed and became worthless.

Do not the same conditions hold good at the present day? Would it not be well for writers on the instability of the aristotype to go a little deeper as to the conditions under which the much-abused combined bath was used,—whether the bath that was responsible for any of the spoiled prints when employed was fresh or stale, whether of normal strength or exhausted, also if any care was taken by the operator to acquaint himself with the condition of the mixture with which he was working? These are pertinent questions to be answered before condemning either the manufacturers for advising a combined bath or the aristotype process in general.

The lesson to be learned from the present agitation of the subject is but a repetition of the old saying that "history repeats itself." The deductions arrived at over a quarter of a century ago, were, that no professional photographer who has any regard for his reputation or the permanency of his work can safely depart from the old and well-tried separate toning and fixing baths, as the combined bath, though under exceptional circumstances, it is true, offers the same results, but in the general run of business, and in the hands of the average assistant, is dangerous and unreliable.

J. F. S.

CLOUD PHOTOGRAPHS.

CONSIDERABLE effort has been put forth of late by French experimenters to obtain cloud photographs of a perfect character, and with interesting results. In one case, as it appears, there was employed a diaphragm with a very small perforation in front of the lens, a short exposure being made, this giving only a faint image at first, but a perceptible contrast, and then the process known to photographers as intensification is resorted to, though there is danger of ruining the plates by such an operation. Another method resorted to has been to polarize with Nicol prism the light entering the camera, only a part of the rays proceeding from the sky getting access to the plate in this way, while the light from the clouds remains unaltered. An ingenious plan is that which takes advantage of the fact that the clouds are rather rich in yellow and green rays, and to this end a color screen is placed before the lens that will readily transmit such rays, but exclude blue and violet, excellent results being thus obtained when the clouds are stationary; as yellow and green light is very slow in its action, prolonged exposure is required, and, if the clouds be pure cirri or cirro-cumuli, a little movement will impair the sharpness of their detail and make a bad blur; a liquid screen is preferred—that is, an almost saturated solution of bichromate of potash, to which a few drops of hydrochloric or sulphuric acid have been added, or saturated solutions of bichromate of potash and sulphate of copper, in the proportion of three of the former to one of the latter, may be used, between glass plates having parallel surfaces, and about five or six millimetres apart.

THE ANAGLYPH.*

DUCOS DU HAURON, the noted French photo-scientist, whose researches and discoveries in the field of photographic optics are well known to most all students of practical and theoretical photography, a short time ago exhibited before the Société Française, a number of pictures to which he gave the name of "Anaglyphs." These prints were prepared by a novel method, and involved a new principle incident to the production of photo-stereoscopic effects.

Primarily, they were produced by the application of well-known principles of orthochromatic photography and the use of color filters, which in connection with polychromatic positives culminated in the curious and interesting results shown to the Society; and when viewed under proper conditions produce a stereoscopic effect remarkable for its high relief and aerial perspective.

On the contrary, when the print is seen under ordinary conditions it has the appearance of a confused blur, caused by a *cliche* being printed in two colors, one over the other, but without any attempt to register the superimposed impressions.

The word *Anaglyph* is derived from the two Greek words meaning *above* and *to cut*,—*i.e.*, to cut in relief; and in ancient sculpture was a term applied to chased or embossed work on metal. In the present instance, Du Hauron has used it to denote simply a photo-stereoscopic effect.

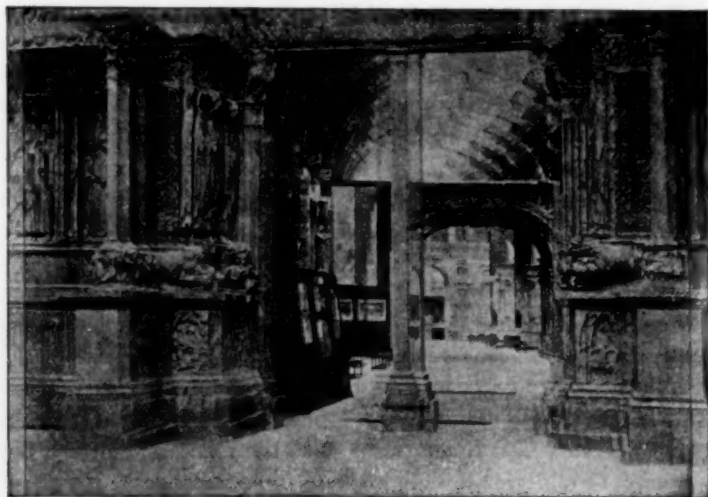
As will be seen by an examination of the specimens here shown, viewed under ordinary circumstances the specimens seem to be nothing more nor less than a confused mass of blue and red ink,—one picture printed upon another in a different colored pigment.

The inscription calls this blurred image, or "wirr-warr," as a German scientist aptly calls it, "A view of the Archæological Museum in the Trocadero, Paris."

Now take this same nondescript polychrome, and view it in a strong light through a pair of spectacles where one glass is red

* Read by Julius F. Sachse before the Photographic Society of Philadelphia, November 14th, 1894.

and the other blue; the result is magical. We have a black picture before our vision wherein the stereoscopic effect is marvellous. The column in the centre stands boldly out, the sculpture has taken shape, the bas-reliefs, cameo-like, embellish the



THE ANAGLYPH—PRINTED IN RED AND BLUE.

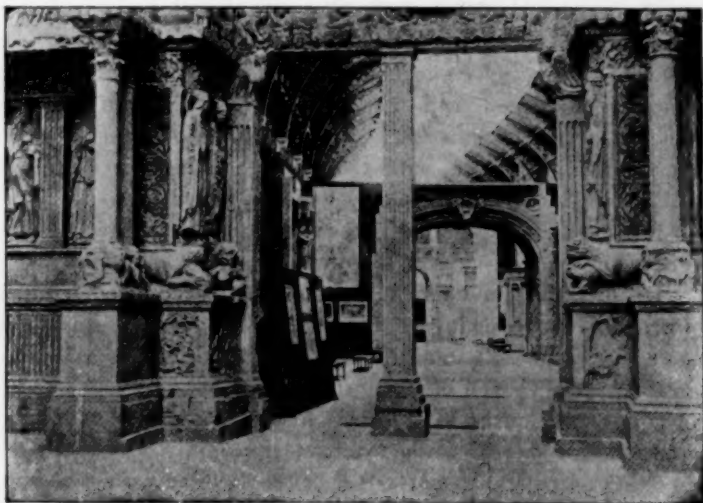
sunken pannels, while the eye wanders down the long corridor which ends in a graceful curve in the distance. Such is the Anaglyph.

Now take another glance at the ordinary photograph from the same standpoint, and remark how flat and ordinary it looks in comparison with the wonderful depth of the Anaglyph.

Ducos du Hauron, in a letter to his friend Demole in Geneva, states that according to his latest experiments an Anaglyph composed of two colors only, and seen with a bichromatic eyeglass, the colors of which are suitably chosen, is capable of producing upon the organ of sight a sensation of color more complete than that which seemingly ought to result from the quality of its constituent elements.

Thus, in practice, in order to produce the red plate it is suffi-

cient to use a phototype obtained by the intervention of a medium green, and for the blue plate one obtained by the intervenient agency of a medium orange-red. In consequence of a curious illusion the eyes equipped with a red and a blue glass, seem to perceive in the charming picture which results, not only the tints shading from the red to the blue, but also from those each of these colors, or even yellow, which nevertheless is absent. The effect



AN ORDINARY PLATE TAKEN FROM SAME STANDPOINT.

becomes more pronounced when for the ruby-red eyeglass a very dark yellow glass is substituted. It is nevertheless advantageous to moderate the difference between the tint of this yellow glass and that of the monochrome, which it is destined to efface for the left eye. If, for example, madder-lake be used for the printing color instead of vermilion, which has thus far been employed for the purpose, red margins would appear in the outlines of the image, rendering somewhat difficult the perception of the relief.

Experiments thus far have failed to show that any sufficient advantages were to be gained to justify a recourse to Du Haur-

on's original method of photography in three colors,—that is, by an addition of a third plate produced through the medium of a violet light, thereby producing the yellow monochrome appertaining to the perspective of the right eye.

Du Hauron goes on to state that it seems to him that until something better is discovered, one should be limited to putting into practice the empiric law which he has already given,—namely, take the phototype of the red with the intervention of a medium green, and that of the blue with the intervenient agency of a medium orange-red. It will be best, Du Hauron goes on to state, to employ orthochromatic plates; for example, for the phototype obtained with the medium green, plates of what are known as "Light Series A," sensitive to yellow and to green, and for that obtained with the medium orange-red, plates of "Light Series B," sensitive to yellow and to red.

It is needless to say that in the anaglyphic process all ideas of instantaneous exposures or snapshots are out of question.

Dr. E. Batault, an eminent Swiss scientist, in commenting upon the optical problems involved in the production of the Anaglyph, gives the following explanation of the scientific features embraced in this special branch of photo-stereoscopy, viz. :

It has been known for a long time that the sensation of relief and aerial perspective is due to binocular vision. Both of our eyes, in fixing an object, do not see it at the same angle, and accordingly not exactly in the same manner, and it is the sensorial superposition of the two pictures thus obtained which gives rise to the idea of depth.

The general problem of stereoscopy consists then in presenting to each eye the picture of an object as it would see it, and from the cerebral or subjective superposition of these two pictures will arise the impression of real relief of the thing represented. But just here comes a slight difficulty; if we present to our two eyes two pictures slightly dissimilar, for example, two photographs taken from two points as far apart as the eyes are distant from each other, each eye will see, not only the picture corresponding to that which it receives of the reality, but also the two at once, because of the extent of the field of vision.

Moreover, if the left eye fixes the centre of the left picture, the right eye immediately converges towards the same point, instead of directing itself toward the centre of the right picture. If we suppose, as is necessary, that the distance between the centres of the two proofs be equal to that between the eyes, it will be necessary, in order that each eye may regard the corresponding point in each of the pictures, that the view be unbounded, for in that case the optical axes are parallel. Now, the eye contains an optical apparatus, the crystalline lens, which does not admit steady focusing for all positions, but which, on the other hand, has the wonderful property called *accommodation*. This gives an instantaneous and automatic focus for a certain distance, and it calculates that distance in a mathematical, trigonometrical manner, the power for which is furnished by the convergence of the eyes.

The vision consequently is caught between two alternatives equally defective; either each eye is directed toward the centre of each of the pictures, in which case we see indistinctly, because the optical axis being parallel, clearness exists only for objects at a distance, or we see distinctly, but in the latter case the two eyes are directed upon one of the two photographs. In order to obtain at the same time a distinct view of a single picture by each eye, an artifice must be employed. The ordinary apparatus known under the name of the refracting or Brewster stereoscope solves this problem for us. Indeed, by interposing between the eyes and the proof two prisms, ridge to ridge, suitably choosing their angles, one can have the virtual superposition of the different points of the two pictures, and in consequence the relief, while allowing the eyes to converge to the same degree as in ordinary sight, precisely the result sought. The angles of the prisms may vary within certain limits, for an exact accommodation may be had by varying their distance from the pictures. By this process, there would be seen in spite of all, three pictures, a middle one in relief and two plates. These last two may be destroyed by placing between the two prisms and perpendicularly to the proof looked at, an opaque partition limiting the field of vision of each eye. The same end may be reached by disuniting by practice the convergence of the accommodation, that is, by provoking an

artificial strabismus, but that is a slow, tedious process and of but little practicability.

After the general considerations we can define an Anaglyph as a stereoscopic effect produced by colored pictures.

Let us suppose that there are printed, in two different colors, upon the same sheet of white paper, two stereoscopic designs in such a manner that their corresponding points may be quite near to each other. Let the selected colors, which should differ greatly, be blue for the left picture and red for the right. At first sight, these two proofs, according to what we have just said, will be mingled together partly confounded, and will present a mixture but little agreeable and still less comprehensible. But if we look at them with the aid of an eye-glass, having a red glass before the left eye and a blue one before the right eye, the scene changes immediately, and to the previous chaos succeeds an harmonious and satisfying impression of relief and perspective. What has happened? A fact which upon first consideration seems somewhat paradoxical, or at least incomprehensible;—the left eye, equipped with a red glass, can see the left picture only, which is blue, the second picture, red, representing the other proof, becoming invisible because a red design upon a white ground is not perceptible in red light. For the same reason the right eye sees only the picture which is destined for it, and the stereoscopic superposition instantly follows.

The convergence and the accommodation are both satisfied, because the two designs present only an insignificant distance apart and within the limits in which the focusing is still sufficiently exact. Moreover, the pictures may be of any size, since whatever their dimensions they can always be printed as near to each other as desired, or indeed one upon the other.

In order that the effect may be a complete success, certain other conditions are necessary. The designs should be of tints sufficiently light and the glasses of the spectacles dark, accordingly it is necessary to employ an intense light, without which, considering the great absorption of light, the result is dull and dark. If the rays reflected by the designs and admitted through the glasses were absolutely monochrome, the pictures would

appear in black upon a background formed by the mixture of the two adopted colors. In fact, a picture emitting blue rays only should become black in a red light, since all the rays which it reflects are arrested by the red glass, that is, it is presented under the appearance of a design without color upon a monochromatic background. Whether this new process of obtaining stereoscopic effects, which requires the co-operation of the photographic processes, and a sufficient knowledge of the theory of colors, will ever be of any practical value, is hard to foretell.

It is evidently not a process for amateurs, upon the other hand it is one of intense interest in a theoretical and scientific point of view. For the unversed it is a curiosity.

To the general public it will prove a scientific problem, the solution of which is to be found in a pair of spectacles, and in virtue of this it may be destined to attract some attention outside of the scientific circles.

In conclusion I will state that at various times experiments have been made to utilize this principle of superimposition, both in monochrome and color, together with bichromate glasses to produce stereoscopic effects upon the screen by the aid of a binual lantern.

The latest successful attempt was, I believe, made by Ander-ton, of London, who used ordinary stereoscopic transparencies, that were cut in two and used as ordinary lantern slides. To produce the anaglyphic effect he polarized his light by aid of two bundles of glass plates in lieu of Iceland spar. These were placed at some distance from each other, the first bundle of glass plates acting as a polarizer, the second as an analyzer. The image was projected through this combination in the ordinary way upon the screen, but the colors did not coincide.

To bring out the stereoscopic effect, as is the case in the specimens of the anaglyph now before the Society, a special lorgnette was provided for each spectator which was to act as an analyzer; in this case they were of white glass.

The screen was coated with silver foil, as every substance except a metallic one that reflects light also polarizes it.

Stereoscopic projections in two colors, red and blue, have also been attempted upon an ordinary screen, the analyzer being a red and blue bichromate lorgnette, as is the case before you. The results, however, were not a general success, on account of the difficulty experienced in determining the correct distance apart of the superimposed images upon the screen, and in obtaining the proper shades of lenses for the eye-glasses, which to bring out the maximum effect must coincide with the colors used in the print or projected image.

The New Stamps.—The new issue of postage stamps will differ from the current issue in several particulars. Its denominations, for example, will be one, two, three, four, five, six, seven, eight, ten, fifteen and fifty cents, and one, two and five dollars. The regular current issue—that of 1890—has no eight-cent stamp, for that became necessary only with the change in the registry fee from ten to eight cents during the late Postmaster General's administration. Neither has the issue of 1890 any fifty-cent stamp, or any of the series from one dollar upward. The coming issue will drop out the thirty and the ninety-cent stamps, transferring the heads of Thomas Jefferson and Commodore Perry, which now stand on them, respectively to the fifty-cent and one dollar denominations. The Postmaster General has made the designs of the two-dollar and five-dollar stamps a special consideration. Looking over the rest of the series he found portraits of Washington, Jefferson, Franklin, Jackson, Lincoln, Grant and Garfield, representing the executive branch of the Civil Government: Sherman representing the army and Perry the Navy, and Webster and Clay representing the legislative branch. But the judicial branch has been persistently ignored in the stamp portraits from the foundation of the government till now. In an earlier issue Alexander Hamilton had figured, but the great Constitution maker of opposite education and faith had been ignored, so now John Marshall and James Madison are to appear on the two-dollar and five-dollar stamps.

There s a lesson to be learned from the pin, my son. It is given a head that it may not go too far.—*Boston Transcript.*

THE GRAIN WEIGHT.*

BY J. U. LLOYD.

HISTORICAL.—The cereal *Triticum sativum* is the most valuable of food-producing plants, its seed, under the name of "wheat," being the principal bread-stuff of civilized nations. The plant is accepted by some to have been a grass that originated in the Mediterranean country, but this impression seems largely to be based on conjecture, and its origin as a food-plant is probably lost in the darkness of antiquity.

Scripture mentions the plant, and by some persons its origin has been ascribed to ancient Egypt. China is said to have introduced wheat 2,700 years before Christ. These points are records of general history, and pass comparatively unaltered through ordinary literature.

Standard modern dictionaries inform us that the weight of the fruit of this plant is the basis that 600 years ago in England was used to establish the grain weight. Most authorities make the same general statement to the effect that a plump grain of wheat was used as the standard employed to establish the grain, but Prof. Remington ("Remington's Pharmacy") gives the matter a historical record better than any other pharmacy work consulted, and with which, in a general way, my own researches agree.

As the statements of authorities as a rule coincide with that of Webster, it may be taken as typical, to wit,—"*Grain*.—The unit of the English system of weights, so-called because considered equal to the average of grains taken from the middle of the ears of wheat." This would lead us to believe that a grain in weight should be the counterpart of an average grain of wheat.

Concerning the origin of the grain weight, C. W. Pasley, "Measures, Weights and Money," London, 1834, page 8, says: "Those days of feudal ignorance, in which the standard of English lineal measure was referred to the average length of a barley-corn, and the standard of weight to the average weight of a dry

* Read at the forty-second annual meeting of the American Pharmaceutical Association, Asheville, N. C.

grain of wheat from the middle of the ear," which might also lead to the inference that our present grain weight represented the weight of an average grain of wheat at the time of standardization.

But careful preliminary weighings, which I had made of good samples of wheat, convinced me that an inference drawn to that effect would be erroneous, and that modern grains of wheat do not average a grain in weight. It is exceptional for a single abnormally large wheat grain to weigh a grain.

Giving the literature on the subject some further study, in order to find an explanation of the inconsistency mentioned, I arrived at the fact that, while the grain weight actually represented the weight of average grains of wheat about 600 years ago, this standard was changed 200 years afterwards.

Johnson's Universal Cyclopædia, 1893, gives the following summary of that fact in the definition of the word "Grain:" "*Grain.*—A statute of Henry III (in the year 1266) enacted that 32 grains of wheat from the middle of the ear, well dried, should weigh a pennyweight, of which 20 should go to the ounce; but finally, in the 12th year of Henry VII, the pennyweight came to be divided into 24 grains."

Thus it is seen that 32 standard grains of wheat were used 606 years ago to establish the *pennyweight*, which then became the *unit* of weight. This pennyweight, about 200 years afterwards, was divided into 24 parts, and thus produced the number of grain weights (24) that now (providing no other changes were made in the standard) make a pennyweight. Hence, one pennyweight (or 24 grains in weight) should now balance 32 grains of wheat, if wheat still conforms in size and weight to the standard taken as an average of wheat in the year 1266. In order to conform to the standard employed by statute of Henry VII, 100 grains of wheat should only weigh 75 grains.

Comparison of Different Wheats.—We have thus (if no subsequent change was made) a well-established standard concerning the weight of wheat 600 years ago, and an average of the wheat of the world now should show us the effect that time and cultivation have had on the size of the fruit. It is not enough for

this purpose to take the product of a single state, or of one country; a broad average should be made of the wheats of the world. This seed, like other plants, is affected by drought and climatic influences, and yet an average of the wheat products of the principal wheat-yielding lands of civilization might give us a record that may be accepted as indicating either that the grain, so far as size is concerned, is being improved or is retrograding. The English grain weight has probably remained intact since its second standardization,* and if any change has occurred, it is to be looked for in the weight of the seed of the wheat. According to the statute of King Henry III (already cited), the standard grains are "well dried," which is taken to have meant air-dried.

1. Accepting that the standard grain weight was created from grains taken from the middle of a selected head of wheat, it is shown that from bulk lots of wheat that appear in most of the markets of the world, an average of the heaviest samples will yield a grain as heavy as was the grain of the original standard.

2. The general average of all the samples is below the standard grain weight, being 60.870, when it should be 75.000.

3. With two exceptions (England and New Zealand), white wheat headed the list as far as size of grain is concerned.

4. Warm countries seem to yield the largest grain, and also contributed the greatest proportion of white wheat according to these samples. Thus, India furnished but one specimen of red wheat out of eight considered, and supplied three specimens to head the list in comparative weight, while Russia furnished but one specimen of white wheat (which, however, came from the Baltic Provinces) out of nine samples, and averaged last in the list.

Standard modern dictionaries and other authorities inform us that the grain weight was established in England 600 years ago, from the weight of carefully-selected wheat grains. (Webster, Pasley.)

From these statements an inference might be drawn, as though the average wheat grain should equal a grain in weight. Ex-

* "Fortunately, one unit common to troy, apothecaries' and avoirdupois weight has been saved,—namely, the *grain*."—*Remington's Pharmacy*, page 35.

periment shows, however, that it is exceptional for a grain of wheat to weigh as much as a grain.

This seeming contradiction is readily explained by the historical facts,—viz., that by statute of King Henry III (1266), it was enacted that 32 grains of wheat, from the middle of the ear, well dried, should weigh a pennyweight; and that in 1497, by statute of King Henry VII, this standard was changed, inasmuch as the same pennyweight was then subdivided into 24 grains. (See Johnson's *Cyclopædia*.)

Thus, until 1497, 32 average grains of wheat weighed 32 grains, providing grain-weights were then employed; but after the enactment of Henry VII, the 32 grains of wheat weighed but 24 reconstructed grains. Since then the grain standard, so far as I can determine, has suffered no further change; 100 average grains of wheat should therefore weigh 75 grains.

In comparing with one another the weights of forty-two separate lots, each of 100 grains, from specimens of wheat from different countries (Australia, England, India, Russia, South America, United States and Canada), the general average in the weight of wheats from all the before-named countries, was found to be far below the given standard, it being only 60·85 grains. However, an average of the heaviest of the specimens, one from each country, came very close to that of the original standard,—viz., 74·734, instead of 75 grains.

This would seem to show that cultivation and climatic condition during a period of 600 years, have exercised but little, if any, influence on the weight of selected wheat.

HE who never connects God with his daily life knows nothing of the spiritual meaning and uses of life; nothing of the calm, strong patience with which ills may be endured; of the gentle, tender comfort which the Father's love can minister; of the blessed rest to be realized in his forgiving love, his tender Fatherhood; of the deep, peaceful sense of the Infinite One ever near, a refuge and a strength.—*Farrar.*

A REPORT FROM THE COMMITTEE ON PROGRESS IN SCIENCE AND ART

OF THE SOCIETY OF AMATEUR PHOTOGRAPHERS IN NEW YORK.

THE Committee on Progress in Science and Art beg leave to report that at their meeting September 20th, Dr. Stebbins and Mr. C. W. Canfield were elected members of the Committee. A general discussion as to the scope of work of the Committee for the ensuing year took place, and it was finally decided that for the present the committee would try to present an equal amount of practical and scientific work to each meeting of the Society.

A question arose as to the relative value of different developers, and it was decided that a series of experiments be instituted to settle the question, if possible. The first of the series should be the exposure of a number of plates of the same brand and emulsion upon a given subject as rapidly as possible in succession. The exposure to be made by one of the members using the same camera and lens and the shutter to be fixed at a certain speed. We would here remark that in order to eliminate all chances of error in time of exposure, the committee, in these and other contemplated experiments, feel greatly the need of a set of matched, single or rectilinear $\frac{1}{4}$ plate lenses, and hope that the Society, in the near future, may see its way open to furnish the same. Two of these exposed plates were to be sent to such members of the committee as were familiar with and used constantly either Pyro, Metol, Eikonogen, Hydrochinon, Amidol, or Iron to be developed. After development they were to be marked with their private mark and submitted to the committee at their next meeting, October 8th, and by the committee to the Society at the regular meeting, 9th inst. Dr. Leaming was chosen Exposer. To use Banner plates 5x7, with a rapid rectilinear lens and a Bausch & Lomb shutter. Most of the developed plates are presented for examination.

The committee deem it advisable to present to the Society from time to time questions for discussion, and would therefore present as the first for discussion, "What constitutes a good

negative?" They hope that the members will interest themselves in these discussions and engage in them, for be believe that societies like our own are intended to be helpful, mutually helpful; not that of the man who will take all in, but give nothing out; who goes in for what he can get and then stops. We ought to mutually help and expect to be helped. There may be some excuse for the professional to decline giving out what he considers to be his secrets, but there is none for the amateur. He has no right to pursue a "dog in the manger" policy. Having experienced pleasure in the pursuit of his hobby himself, he should have no desire to leave others groping in the dark, but be only too glad to extricate another from some slough of despair, which unfortunately too often occur.

Mr. Murray, a member of the Society, gave an interesting and valuable demonstration of the equations relating to Foci and an easy adaptability of the same in the proper use of stops and time of exposure for various rapidity in plates. The committee feel that too little attention is paid to these subjects by most of the members, as a greater familiarity with these would tend to the production of better and more intelligent work.

IN MEMORIAM—CHARLES EH RMANN.

PROFESSOR CHARLES EH RMANN, one of the editors of the *Photographic Times*, and Instructor of the Chautauqua School of Photography, and who is well known to the readers of photographic literature, died at his late residence, No. 22 West 111th Street, New York City, on Tuesday morning, October 22d in the 73d year of his age.

Professor Ehrmann had been unconscious for some days, and his final dissolution was not unexpected. The funeral services were held at the house on Wednesday evening, Rev. Dr. J. L. Hurlburt officiating. There was, in addition to the relatives present, a large attendance of men prominent in the various branches of photography, every department of the trade and pro-

fession being represented. Early on the following day the body was taken to Philadelphia and buried beside his wife, who had gone but a short time before.

Carl Ehrmann was a native of Germany: he was born in a small town in eastern Prussia, January 28th, 1822. He had a collegiate training, devoting himself to studying the pharmaceutical art. Entering the Berlin University in 1847, but a few months prior to the beginning of the great political storm that broke out in 1848, young Ehrmann naturally was found among the Revolutionists. After the rebellion was suppressed, and order restored, he fled to England; and then, like hundreds of his countrymen, sought safety under the stars and stripes.

At first he went west, and tried farming in Michigan; thence he went to California when the gold fever broke out. After many vicissitudes he reached Philadelphia, and obtained a position as drug clerk. Here he became acquainted with McClees and Germon, on Arch Street, then among the leading daguerreotypists in Philadelphia. This was during the transition period, when the ambrotype and talbotype were beginning to assert themselves.

Washington Germon hired the young druggist at five dollars per week to experiment and find if possible a way to coat a glass plate evenly with sensitized albumen, so that a negative could be made upon it.

This process had been put on the market a short time before by Whipple, of Boston, and was known as the *Crystalotype*, technically as the "albumen honey process." Ehrmann eventually was successful in obtaining a uniform coating on the glass, and even negatives were the result.

From that time dates Professor Carl Ehrmann's connection with the photographic processes, which he continued up to the time of his death.

Professor Ehrmann became associate editor on the staff of the *Photographic Times* in 1881, being, we believe, selected for that responsible position by J. Traill Taylor when he assumed editorial charge of that journal.

A PROCESS OF PHOTOGRAPHING IN COLORS.

PROFESSOR JOLY, of 39 Waterloo Road, Dublin, describes as follows his process of obtaining, by means of a single photographic image of an object, a representation of this object in its natural colors, or in colors seeming such to the eye.

A sensitive film sensitised for the red rays (when all colors are to be reproduced) is exposed beneath a parti-colored screen bearing lines ruled in transparent pigments. These lines may lie diagonally or otherwise on the plate. They are ruled in three several tints having such selective light absorptive properties as will secure that one line will so sift the light passing through it that the sensitive film beneath will be affected in a manner corresponding to the manner in which (according to measurements and theory) the red-sensitive nerves in the human eye are affected by the various wave lengths of the spectrum. A second line will similarly sift the rays falling upon it so that the plate beneath will be affected in the same manner as the green-sensitive nerves are affected by the several wave-lengths; the third line will do this in the manner in which the blue-violet sensitive nerves are affected. The colored lines are ruled on so as to lie adjacent to one another, and of similar width, a dividing engine or similar machine being employed to shift the plate beneath the pen or pens on the completion of each stroke. The dyes or pigments used must be suited to the sensitiveness of the plate to the several wave-lengths. Thus I may use chrysoidine orange for the red selecting line, ethyl green and chrysoidine orange for the green selecting line, water-blue for the blue-violet selecting line, or any other pigment which I may find suitable. The plate taken for exposure under this screen must be placed in the camera with its sensitive surface bearing in close contact with the ruled surface of the screen. The rays thus fall upon it after passing through the screen. An unlimited number of plates may be successively exposed under the same screen.

Upon development of the plate in the usual manner an image in the usual silver deposit is obtained which shows no color, but

is finely divided into linear areas, every third area registering the image as sifted through the red-selecting dye, every third again the image as sifted through the green-selecting dye, every third again the image as transmitted through the blue-violet-selecting dye. It being understood that, the lines upon the primary or taking screen being in the successive order, red, green, blue-violet, red . . . and so on, no two lines of the same color-selective properties lie adjacent to one another.

From this negative a positive transparency is printed by contact in the usual manner. This contains the same registration of the color-selective properties of the dyes, only that now what was before opaque has become transparent. If now this photograph is viewed through a screen with lines ruled in transparent pigments of the same dimensions as those used in taking the plate, but in the three primary colors, red, green and blue-violet, and so placed against the photograph that a red-colored line falls upon a linear strip of the image which had been taken through a red-selecting line upon the taking screen, a green line upon a strip of the image previously obtained through a green-selecting line, and so for the blue-violet also, then the image is seen in its original colors. To produce this effect upon the eye and also not to interfere with the form of the image the lines must be of sufficient fineness to blend—or be unobtrusive—when viewed by the unaided eye. Hence it is desirable that the lines be ruled some 200 to the inch or closer.

In viewing the picture through the parti-colored screen it is essential that the lines upon both plates (the photograph and the screen) be in close contact. I may use plates of specially flat or polished plate glass to secure closer contact. I may also rule the primary colors directly upon the photograph. Similarly I may use a sensitive plate for taking the photograph in the first instance which has the requisite selectively-absorbing color tints ruled directly upon the sensitive surface and which may wash off in the subsequent operations attending development. I may of course develop the original photograph as a positive and then rule the lines upon its surface.

Instead of a linear "pattern" I may use one consisting of

squares, diamonds or any other suitable similar forms, the colors in this case being stamped or rolled upon the plate from a surface bearing minute raised patches suitably spaced, so that after three such printing operations the entire surface of the plate may be overlaid with patches of the three requisite colors in close juxtaposition. The taking and viewing screens are of course stamped or printed to the same dimensions and form of "pattern," or I may lay in the tints by use of dotting pens which are vibrated mechanically as the plate is passed beneath them. I may also take and view the photograph through lines having the same tints, that is tints approximating to the three primary color-sensations. Or I may secure an approximation to the original color sensations by the use of more than three tints, as in some methods of composite photography, and these may be the same both in taking and viewing the picture. In cases where I use the same tints for the lines used in taking and viewing the picture I may lay those down upon the solid transparent support of the sensitive film as a substratum, and varnishing the ruled lines with waterproof varnish, deposit the sensitized emulsion upon this substratum. Such a plate is exposed in the camera through the transparent tinted support and developed as a positive, when without further treatment it reproduces to the eye the colors of the original object more or less accurately when viewed as a transparency. I may in all cases aid the reproduction of the original colors by the use of uniform color screens inserted in the path of the rays falling on the plate either for part of the time of the exposure or during the whole. Thus I may aid in the registration of the red rays by inserting a screen cutting off the shorter wave lengths, more or less, for a portion or the whole time of the exposure.

Where the same finely distributed tints are used both in taking and viewing the photographic image these may not necessarily be deposited according to an accurate "pattern" upon the plate, but promiscuously, as in the form of fine flaky dust let fall upon the plate and protected by a waterproof varnish, or contained in a layer of gelatine maintained in a fluid state while the dust is being deposited. The dust may consist of minute particles of glass

colored in the requisite tints. Or they may be impressed upon the plate as previously described by printing from a surface with a raised pattern. Or such colors may be laid on in colored fluxes and burnt into the glass support. Again such fluxes, mixed with a suitable liquid, may be ruled upon the plate in fine lines as before described, and then burnt into the plate. Or by passing the plate under three successive rollers with suitably spaced raised lines or spaces the three colors may be deposited. In all these cases I may keep the plate at a raised temperature while putting in the color so as to facilitate the drying of the inks and preserving the adjacent lines from running into each other.

The tints, red, green and blue, carried by the view screen are those of the fundamental color sensations, approximating to the tint of the red lithium band of the spectrum for the red, to the green of the E line region of the spectrum for the green, and to a lapis-lazuli blue for the blue. These are ruled upon the screen in such depths as will secure that the finished screen shows little or no color to the unaided eye when looked at by transmitted light, but looking darkened or grey due to the light absorption of the three tints. I may also depart from these tints somewhat when it may be requisite to do so in order to secure that one and the same screen shall serve both for taking and viewing the picture. Or I may even add to the number of tints in accordance with some methods of composite photography, or use less than three tints when pictures of less variety of tints are required.

I find that the aniline dyes, mixed with thin dilute gum arabic, are suitable for ruling upon the plate,—more especially if this is coated with a thin layer of clear gelatine which has been allowed to dry before the colors are ruled upon it. I use ordinary drawing pens with carefully set blades. These are conveniently provided with micrometer screws for adjusting the width of the lines. But generally it is requisite by microscopic examination to make sure that each line has the correct width. It is best to provide separate pens for each color, and have these displaced relatively to each other by such an amount that the lines ruled by the leading pen are dry before the lines made by the second pen are deposited near them, and so also for the third set of lines.

This displacement may either be at right angles to the direction of the lines or in the direction of the lines; at the conclusion of each stroke across the plate, the plate or pens are shifted by the action of the screw of the dividing engine through the width of three lines in a direction at right angles to the direction of the lines.

I may mix the dyes with gelatine and rule this upon the plate, which may or may not be coated with a preliminary layer of gelatine; the aniline colors or other coloring matters may be dissolved in a warm dilute gelatine and ruled on to the plate while in a fluid condition. In this case I maintain the pen or pens warm by the use of a spiral of platinum wire surrounding the upper part of the pen, so that when this is heated by an electric current the requisite temperature is maintained. Or I may warm the metal frame carrying the pen or pens by the use of gas jets, or other means. The plate to be ruled may be plain glass or carry a thin film of clear gelatine as a substratum. The plate may also be warmed, but I find it an advantage to let the gelatine cool sufficiently upon contact with the plate to render it so far set that no running occurs. In this manner I may use simultaneously the three colors in adjacent lines, only displacing the pens so much in the direction of the line as to allow of the setting of the one colored line before the next line is deposited alongside of it. Or I may arrange the pens in the manner already described.

I may use any convenient solvent for the dyes for making the inks and any convenient substratum upon the plate, or I may dispense with this latter altogether. I may rule the lines upon celluloid or other transparent support.

The lines may be varied in width when it is desired to give prominence to one particular tint in the objects photographed. The width of the lines on both screens must, however, correspond. Thus if, to strengthen the reproduction of the red, for example, the red-selecting pigment on the taking screen is ruled somewhat wider than the green and blue-selecting pigments, then the lines on the view screen in the fundamental red color must be correspondingly wider than those lines which carry the green and blue tints.

The lines on the view screen may if necessary—(as in the case



PROFESSIONAL FLASH-LIGHT PHOTOGRAPHY,
NEGATIVE MADE WITH THE MCCOLLIN PROFESSIONAL FLASH LAMP AND BLITZ PULVER.
NEGATIVE BY J. A. BAUMGARDEN, SPRINGFIELD, OHIO.

of large plates)—be ruled so much narrower than those on the taking screen as will allow for the shrinkage of the photographic film in the process of development where this might amount to so much as to cause want of coincidence between the lines or other "pattern" upon the photographic image and upon the view screen. The colors of the view screen may underlie the sensitive film, being primarily deposited upon the glass support; the colors of the taking screen may be carried on the outside surface of the sensitive film, being deposited in exact register with the view colors beneath. The plate is exposed through these last colors, which wash off upon development. Or it may only carry the view colors and be exposed through a removable "taking" screen. In these cases the plate is developed as a positive, when it may be viewed as a photograph in colors owing to the presence of the visual screen beneath the film.

Or a negative of the image, being obtained by exposure beneath a taking screen, (which may be carried, ruled directly upon the surface of the sensitive film), is printed as a positive upon a plate carrying a view screen beneath its sensitive layer, the requisite correct register being secured by the use of stops, etc.

I may obtain the negative by means of the following arrangement, equivalent to a finely-divided color screen. A silvered-glass plate, or a plate otherwise coated with a thin opaque film as by a dark varnish, etc., has the opaque film removed in places according to pattern of fine clear parallel lines spaced at double their own width from each other. On the clean spaces are a little less than half the area or width of the opaque spaces. Such a plate may be formed by a dense photographic image, either by contact printing from such a semi-transparent screen as described above, or by a reduced image of the required pattern from a larger surface or diagram. The semi-transparent screen is so attached as to be superimposed upon, and movable through a known small distance across the surface of, a sensitive film. Thus the image in the camera only reaches the sensitive film through the clear lines engraved upon the screen. In taking a photograph the screen is shifted into three successive positions, each advance being through the width of one clear space or a little more, and

at each advance a differently-tinted uniformly-colored screen is introduced in the path of the rays forming the image. These screens are such as will secure the proper registration of the several colors upon the plate. Or the engraved plate may have lines so spaced as to admit of two, four, or more colored screens being used. Subsequently I view the photograph so obtained through a screen similarly ruled with the suitable transparent tints, or imprint or rule these tints directly upon the positive image. Or the opaque primary screen may be cleaned or perforated according to any regular pattern engraved or photographed upon it so that the entire surface of the sensitive plate or nearly so can be exposed by a number of shifts or movements of the screen corresponding to the number of plain color tints used in taking the photograph. Subsequently the photograph so obtained is printed as a positive and viewed through the screen of transparent tints spaced according to the pattern of the primary screen. The secondary screen may be subsequently imprinted or ruled upon the positive.

I may avoid or lessen the effects of parallax, due to the rays of the camera being divergent and the finely-divided screen in some cases not being in optical contact with the sensitive surface, by placing the colors not in exact juxtaposition, but so that a minute distance separates the several color plates or lines; the secondary screen being similarly divided. Or I may only confer this minute separation upon the colors of one of the screens. Thus, subsequently, when the photograph is looked at obliquely through the secondary screen, there will be less change of tints due to the parallax arising from the want of optical contact between the screen and the photograph. Or I may secure the absence of this effect in projecting upon the magic-lantern screen by using a projecting lens of like focal length to that used in the camera when taking the photograph. I may use a semi-transparent screen, upon the plane of which the image is formed, screen and image being again projected by a lens upon the sensitive plate. Or for direct eye observation of the picture I may regard it through a lens or lenses so that the rays from the picture to the eye have

the same divergence as obtained in the camera when the picture is being taken.

The image may be formed in the camera upon a parti-colored screen larger than the sensitive plate, and a lens within the camera used to reduce both image and screen to the dimensions of the plate. In this way a very fine sub-division of the image may be secured. Subsequently in viewing or projecting the image a similar optical arrangement may be used.

Suitable frames can of course be constructed into which the taking and viewing screens may fit and be at once in register relatively one to another.

It is obvious that any of the above mentioned arrangements may be used in taking and viewing stereoscopic photographs.

A Famous Show of Beauty.—The show of distinguished beauty, transfixing by famous artists, which is now taking place at the Academy of Fine Arts in New York, has been anticipated by the COSMOPOLITAN Magazine in its November issue, in an article by Wm. A. Coffin, with illustrations of some of the more beautiful faces. The "Great Passions of History" series has for this month's subject the romantic career of Agnes Sorel, who influenced the destinies of France under Charles VII. "The Art Schools of America," "The Great British Northwest Territory," "The Chiefs of the American Press," and the "Public Library Movement," are amongst THE COSMOPOLITAN'S table of contents. Survivors of the war and their children will find intense interest in "The Story of a Thousand," a personal narrative begun in this number by Albion W. Tourgée, who tells in a graphic way of a regiment which saw fierce service—of its organization, its marches, its sports, and its death-roll.

The best hearts are ever the bravest.—*Lawrence Sterne.*

It is well to think well ; it is divine to act well.—*Horace Man.*

Whatever is worth doing at all is worth doing well.—*Chesterfield.*

The Editorial Dropshutter.

Our Frontispiece is a reproduction of a German commercial "photograph," which was in reality a photo-lithograph, or "Licht-druck." It is a scene in the quaint old German city of Nuremburg, where every corner and turn offers a subject or bit for the artist's pencil or tourist's camera.

Professional Flash-Light Work.—Now that the dark and dull days of the year have come, and as the joyous holiday season draws near, a combination that always raises both hope and despair in the heart of the professional, the latter will hail with delight the advent of a new professional flash-lamp, so constructed that negatives can be made in the studio under the most adverse conditions of the weather. The new apparatus, known as the McCollin professional flash lamp, using Blitz-Pulver as an illuminator, is a small, compact instrument, made especially for the studio, and is conspicuous for its simplicity and inexpensiveness. It is always ready for use, light and portable, and can be taken to the house of a client if necessary. This feature is in direct contrast to the other expensive studio flash apparatus that have been put on the market. No gas, tube, or other intricate appliances are needed; a single match and the pressure upon the bulb do the work.

Our illustration well shows the great power of the new artificial illuminator. The scene is a group of the Pauline Hall Dorcas Company, made by J. A. Baumgardner, during a professional demonstration of the apparatus, in the Grand Opera House, Springfield, Ohio. The plate used was a 17x20. The flash-lamp was set up in the balcony, fully 50 feet from the subjects; the camera was placed in the parquet circle. Copies of the original negative can be seen at the publication office.

The Boston Camera Club has withdrawn from the agreement with the Photographic Society of Philadelphia, and the Society of Amateurs of New York, to hold a series of print exhibitions in each of the three cities in turn. The next or seventh annual exhibition was to have been held in Boston in the spring of 1895.

Anaglyphs.—Specimens of this photo-stereoscopic novelty by Ducos du Hauron, were brought before the American Philosophical

Society, at the meeting, held November 16, 1894. The subject led to an animated discussion in which Dr. Cheston Morris, Prof. Green, Dr. D. G. Brinton, J. F. Sachse and others took an active part.

A Photo-Stereo-Chromoscope.—Mr. Frederic Ives, on Friday evening, November 23d, at the Franklin Institute, Philadelphia, lectured on "The Photochromoscope," an invention of his, by means of which he claims that the first completely satisfactory reproductions of the natural colors by photography have been achieved. The photochromoscopes shown at his former demonstrations have been "single," but he now shows a stereoscopic instrument, in which the solidity of the image, combined with the marvellous rendering of the natural colors, produces an illusion of reality which is absolutely startling. Owing to the fact that his patents for some recent improvements have not yet been issued, the back of the instrument was boxed in against the source of light, and the peculiar mechanism by which the beautiful results are obtained was not explained to the audience present.

In connection with the subject of stereoscopic photochromoscopes, Mr. Ives said: "Of course, any photochromoscope can readily be made stereoscopic by duplicating some of its parts, just as an ordinary camera is made stereoscopic by using two objectives instead of one; but Nachet, of Paris, claims to have recently accomplished the result in a simpler manner—by viewing the images of the red and green sensations with one eye and that of the blue-violet sensation with the other. Such an instrument, however, can be neither a true photochromoscope, nor a true stereoscope. It is defective as a stereoscope, because the same colors are not seen by both eyes, which tires the nerves of vision, and because some strongly colored objects will be distinctly represented only to one eye, and therefore without stereoscopic relief. It is even more defective as a photochromoscope, because colors cannot be perfectly blended except upon the same retina, the impression otherwise being a changeable one, as the attention is involuntarily drawn from the sensation in one eye to that in the other in rapid succession. This curious effect can be seen by placing deep ruby-red glass in front of one eye, and a deep green in front of the other, and looking at a white object; if Nachet's idea was correct, the object should appear bright yellow; but in fact the color is not only changeable and the impression irritating to the eyes, but it is never at any moment a good yellow. With yellow and blue glasses, corresponding to the mixtures in Nachet's instrument, the defect is less marked

and irritating, but it is one of the same character. In my own instrument each eye sees an image complete as to color rendering, and it is only necessary to place a yellow glass over one eye-piece, and a blue glass over the other, practically converting it into a Nachet instrument, in order to make the result intolerable by comparison. In view of those demonstrable facts it is reasonable to think that accounts of Nachet's device which have appeared in print would not have been written by anybody who had ever seen the image in a true photochromoscope. In fact Leon Vidal, the writer, has confessed that the Nachet pictures are not equal in quality to the Lippman productions, which have in no instance reproduced all of the natural colors as perfectly as you will see them in the photochromoscope to-night."

The latter portion of Mr. Ives' lecture was devoted to the production of permanent color prints from photochromoscope negatives, and a magnificent series of such prints in the form of lantern slides was projected upon the lantern screen. Besides many familiar still-life subjects, the colors of which were well known to the people present, there were views of scenery in Switzerland, Italy and the Yellowstone Park. The first use of such photographic natural-color lantern slides for popular lecture illustrations this winter, Mr. Ives said, will undoubtedly mark the commencement of a new era in lantern lecture work.

The Twenty-third Regiment Fair.—A private exhibition of photographs and interior decorations in the New Armory, Bedford Corner, Atlantic Avenue, Brooklyn, N. Y., has been announced for Tuesday evening, December 13th.

Color Screens.—Despite the very promising results of the three-color system which have been shown in various quarters, there are still some very practical workers who are sceptical of the future success of this work. The results are crude; that may be granted. But compare the half-tone work of four or five years ago with that of to-day. There were people who expressed an equal disbelief that anything good would ever come out of it. Yet see what has been the result of the constant "pegging away" of a small army of workers. Undoubtedly it will be the same with the three-color process the more there are engaged in it the sooner will the higher results be attained. No process worker ought to neglect the opportunity of experimenting, so as to be "in the swim" when the time comes. With the Carbutt Screens the means are ready to hand, and every operator ought to have a set to practice with in spare moments.

A National Photographic School.—The following has been received from a valued correspondent:

EDITOR AMERICAN JOURNAL OF PHOTOGRAPHY:

Regarding the article "A National Photographic School," in your October number, allow me to "second the motion." During the years 1892-3 I had the privilege of studying under Dr. Vogel in Berlin and Dr. Eder in Vienna, and often, during that time, a fervent wish for such a school arose within me. I aired a few of my sentiments on the subject in an article in the 1894 *International Annual*.

Please don't let the matter pass away with that notice of yours as an obituary, but keep at it and we will yet see it an accomplished fact.

If there is any possible way of aiding you I will be pleased to play "the mouse to the lion."

1895.—Now is the time to renew your subscription. Send it in promptly; it lets the publishers know that you appreciate their efforts.

A Book of Reference.—Do not fail to have your JOURNALS bound. It makes a handy volume for reference, and an appropriate book for your centre table

Journalistic.—Mr. George Reid gives notice that he has withdrawn from the management of the *Pacific Coast Photographer*. This relegates the whole control of the journal back to Mr. Morgan Backus.

An Amateur Competition.—The *Illustrated Buffalo Express* has organized its fourth amateur photographic competition. One hundred and twenty-five dollars are offered as prizes. The time limit expires on December 10th, so intending competitors are urged to send in their specimens at once. The *Express* has done good work in spurring the local as well as distant photographer to elevate the standard and character of his work.

The American "Blue Book" for 1895.—We are advised by Mr. Walter Sprague, of Beach Bluff, Mass., who is now at work upon the above edition of the Blue Book, that it will follow very closely the lines of the recent issue of the British edition published in London. In other words it will contain a vast amount of information in addition to the revised lists of members furnished by the photographic societies. We are promised a carefully-arranged list of dealers, opticians, chemists and professional photographers, in the United States, Canada and

Mexico, making a complete photographic directory of the entire Continent of North America. We are also promised carefully-revised lists of societies, "Dark Rooms," and dealers in all other countries, with many additional pages containing Tariff Regulations, Photographic Periodical Publications, and general scientific and photographic information, the whole forming a universal photographic handbook and directory.

Dr. Miethe states that ruby lamp chimneys are not safe after they have been in use for any length of time.

Photo-Cycling.—Photography seems to be coming largely to the fore in the illustrating of papers devoted to cyclists. Not only in the papers themselves, but also in advertisements large quantities of photographs are used.

Stalking with the Camera.—There are a great many hunters armed with magazine cameras instead of guns out in the Maine woods now, watching and working for a chance to get a snap-shot at deer, moose, or any other wild game. The photographers return with some wonderfully interesting results to show in pictures of wild animals in their natural surroundings. And they claim there is as much glory in taking a deer's picture as in taking its life. It requires just as much skill to get within photographing distance as within shooting range, and often more. Any way, it is an interesting new field for the irrepressible amateur photographer.

More Color Projections.—R. E. Gray is back from Europe with a trunkful of exposed plates. We understand that he is busy making slides from these, and that the public will, during the coming winter, have an opportunity of seeing them, as thrown on the screen by the aid of tri-color lanterns.

The Pennsylvania Academy of the Fine Arts.—The directors announce that the Sixty-fourth Annual Exhibition of the Pennsylvania Academy of the Fine Arts will open to the public on Monday, December 17, 1894, and close on Saturday, February 23, 1895. The exhibition will consist of original works not before publicly shown in Philadelphia, in oil-painting, sculpture, architectural design, drawing, etching, engraving, wood and stone carving, stained glass, tapestry, or in any medium coming within the scope of the Fine Arts.

Society Notes.

The Photographic Society of Philadelphia.—The regular stated meeting of the Society was held at the rooms on Wednesday evening, November 14th, the President, Mr. W. H. Bouroughs, in the chair.

After the usual routine business of the evening a paper was read on the Anaglyph (see paper in full, page 541), after which several examples were shown in addition to the specimens described in the paper also some prints from a single half-tone block, two impressions being made, one with red ink and one with blue. The Du Hauron specimens had also been copied, using in one case an ordinary collodion, and in the other an orthochromatic plate. These were passed around for inspection.

In the discussion which followed Mr. Stirling asked whether he had understood correctly, that to produce the anaglyphs it was only necessary to print from an ordinary negative two impressions, one in red and one in blue. Were not stereoscopic negatives necessary?

Mr. Sachse replied that he thought two ordinary negatives were employed, but that one was exposed through a red screen and the other through a green.

Mr. Ives then remarked that it was a physical impossibility to obtain true stereoscopic relief without the use of two stereoscopic negatives, and that the specimens shown were made in that way.

"The anaglyph," continued Mr. Ives, "is an interesting curiosity, but the optical principles involved are the same as in the old and rejected method of stereoscopic screen projections with colored glasses of which it is merely an adaptation. The method has no practical value whatever, because the printing in two colors is more expensive than printing the two halves of the stereogram in black, side by side on the same paper, which gives much better results, not requiring an unusually strong light to see them, and the short focus or prismatic spectacle lenses used not tiring the nerves of vision like the use of two differently-colored glasses. I have seen a book that was illustrated with stereograms (the two images printed side by side, in the usual manner in black), furnished with a detachable eyeglass with prismatic lenses. It seems to me that such illustrations would be very suitable, and add much to the interest of many books on science and travel, and some catalogues. Unlike the anaglyph, one image of the

ordinary stereogram furnishes a good representation without the use of the glasses.

Du Hauron appears to suggest that the anaglyph, if the two halves of the stereoscopic negative be made by exposure through different and suitably colored glasses, should approximately reproduce the colors of the object photographed when seen through the colored glasses. If this were true, the anaglyph would possess one important advantage over the ordinary black stereogram; but it does not require much knowledge of color science to show that the plan is irrational. Not to mention various other difficulties, it is evident that only two of the three fundamental color sensations could be represented in the prints, and even these would not be at all adequately reproduced to vision, because colors can not be well blended through the two eyes.

An optical mixture of the light transmitted by deep ruby and chromium-green glasses makes a beautiful yellow; but if we look at a white object with the ruby glass over one eye and the green over the other, it will look red at one instant, green at another, bronze at another, ever-changing, but never for a single moment such a good yellow as is produced by mixing the colored lights before they reach the eye. Nachet, of Paris, has made the same mistake, in attempting to realize a true reproduction of the natural colors in a "stereo-chromoscope," in which one eye receives one color impression, and the other a different one. In reply to a question as to whether the anaglyphs were sold abroad, and if in general use, Mr. Sachse said that they were sold, but merely as a photo-optical curiosity. He did not that they were likely to become of any practical use, and he had brought them before the Society merely as a photographic novelty.

California Camera Club.—The Fourth Annual Pay Exhibition was opened on Friday evening, November 16, 1894, at the Metropolitan Temple. The subject chosen is the Midwinter Fair.

As this exposition offered every inducement to the amateur photographer for shots at an unlimited variety of subjects, many of the members secured interesting pictures, from which they have made a fine set of two hundred lantern slides, especially for this exhibition. The Club has succeeded in securing the services of Mr. E. H. Hamilton, who will give an interesting talk on the pictures as they are thrown on the screen. As this will be the first and probably the only set of Midwinter Fair views which will be so exhibited, the entertainment should prove more than usually attractive. The proceeds will be for the benefit of the apparatus fund.

Minneapolis Camera Club.—The members of this Club have just passed through the most interesting time that the Club has ever experienced: that of getting the slides ready for the interchange.

For some time past some member of the Lantern Slide Committee has been at the Club Rooms, Wednesday evening of each week to test slides, and Saturday evening, November 10th, the Committee selected 138 slides to be sent to the New York Committee.

A number of the members submitted very fine slides, but the most noticeable was a set of 22 groups by Mr. A. S. Williams, Treasurer of the Club. The groups are well arranged, and the subjects do not have that common "picture took" look.

Monday evening, November 12th, the Club members and some of their friends met at the rooms to see the slides, and all agreed that it was the finest set of slides which the Club has ever made.

An exhibition of photo-mechanical prints and printing processes is to be held at the rooms of the Society of Amateur Photographers of New York, 111-115 West Thirty-eight Street, from December 3d to December 15th. Besides a large collection of foreign work collected by the European Agent of the Society, all the leading photo-mechanical printers of this country will exhibit specimens of their best work. The New York Photogravure Company, The Photochrome Company, Coloritype Company, Edward Bierstadt, Gutekunst, of Philadelphia; Obernetter, of Munich; Craig Annan, of Glasgow, and the Berlin Photographic Company are a few of the exhibitors. A feature of the exhibition will be the large display of prints in colors, a process which is now engaging the attention of many photo-mechanical printers. During the exhibition lectures and demonstrations will be given by Prof. Chandler, of Columbia College; Fred E. Ives, of Philadelphia; Mr. Koehler, of the Smithsonian Institution; Mr. Ernest Edwards, Mr. Walter E. Woodbury, and others. A handsome catalogue illustrated with photogravures and color prints will be issued. The admission will be open to the public without charge.

A fool is about the only man who knows at all times just what he believes.

American Color Screens.—A valuable contribution to the subject was made by Mr. Leon Warnerke at a recent meeting of the Royal Photographic Society. Mr. Warnerke is a sort of pilot in photographic progress. He shows the way, and then his services are forgotten. But he always seems content with the honor of giving to the world the results of his research. His address on "Chromatic Photography" was full of suggestion for experimenters in this direction. Departing altogether from the beaten track he suggests illuminating the object with suitably-colored light instead of placing screens before or behind the lens. It is an ingenious idea, but we are afraid there would be practical difficulties in the way of carrying this out in commercial work. It is often difficult enough to get the subject lighted evenly with the white light, whether daylight or electric, and it seems to us that a difference in the intensity of the colored light on one part of the object would throw out the system. With the colored screens behind the lens, one may be assured that the sensitive plate is equally covered with the proper colored light. Mr. Warnerke was good enough to admit the value of the Carbutt Screens, though preferring his own method. We do not say that Mr. Warnerke's idea is not right, but practical trial will soon demonstrate its usefulness. We know as a fact that it has been a "dodge" of the process operator, when copying a colored picture, to place in front of the arc lamp a suitably colored glass, and this has had the desired effect. Mr. Warnerke's remarks seemed to show that Lumière's color-sensitive plates are likely to give the best results for color reproduction.

"The proof of the pudding is in the eating," and the negatives and proofs of plates produced by means of the Carbutt Screen shown after Mr. Warnerke's lecture were evidence of the possibilities of the process. They were produced by The Stipple Co., of Fitzroy Street, W., who have been for some time past working with the Carbutt Screens. One set of negatives and proofs were from a water-color drawing, and the other from a vase of flowers. The engraved plates were etched by the photogravure process, but for surface instead of intaglio printing, and the result was very pleasing. There was no retouching on the negative, only a little stopping out was resorted to on one or two of the plates in order to give more intensity to some of the high lights.—*Process Work.*

Eyes raised toward heaven are always beautiful, whatever they be.
—*Joseph Joubert.*

Photographic Hints and Formulæ.

A New and Practical Shutter.—The Gundlach Optical Company, of Rochester, N. Y., have put on the market a new shutter for photographic lenses, one which commends itself for the simplicity of its mechanism. The new shutter is unlike any other shutter made, in that all the works are contained within the case, and hence are not liable to get out of order or become defaced with use, besides being protected from the weather, dirt, etc. The blades open parallel, and are so pivoted that the least possible power is required to operate them. It is arranged either for hand or pneumatic release, and for time and instantaneous exposure. This Shutter occupies less space for a given size of lens than any other shutter in the market, as the shutter mechanism is all contained in an accurately turned case. To set the shutter it is only requisite to push a lever as far as it will go to the right. It can be released by either pressing down another lever, or a squeeze of the bulb. The arrangement for time or instantaneous exposures is exceedingly simple, it is done by the mere movement of a lever. When set for time the first pressure opens the shutter, while the second shuts it. The speed of instantaneous exposures can also be regulated by a simple device.

Toning Bromide Prints.—Mr. Kajima Seibei gives the following method of producing colored bromide prints: The prints are developed with eikonogen and fixed in a neutral bath without the interposition of an acid bath, and thoroughly washed. They are then treated with the following solution:

Nitrate of lead	$\frac{1}{2}$ ounce.
Red prussiate of potash	$\frac{3}{4}$ ounce.
Water	12 ounces.

This converts the image from black into a faint yellow. They are again thoroughly washed, and the yellow image is then toned to different colors, with various solutions as follows. For blue:

Perchloride of iron	5 ounces.
Water	6 ounces.

For another blue, called by some a "black blue," the prints are treated with a weak solution of ferrous sulphate. For green:

Neutral chromate of potassium	$\frac{1}{2}$ ounce.
Water	12 ounces.

The prints are washed, and are afterwards treated as for the first of the two blues mentioned. For brown, or "red sepia":

Copper chloride	5 drams.
Water	6 ounces.

The action of this solution is very rapid. For yellow:

Mercuric chloride	90 grams.
Iodide of potassium	150 grams.
Water	8 ounces.

The action of this solution is very slow, but the prints darken in drying. By continuing the action for a long time a very pleasing color, that might be described as "light brown," is obtained.

Brown Ferro-Prussiate Prints.—Ferro-prussiate blue prints can be easily transformed to brown by the following process: The blue print, well washed and dried, is plunged in dilute ammonia for 2 to 4 minutes, until it is almost colorless; then rinse and immerse it in a bath of tannic acid, where it is left until it is clear and toned. This operation requires about twelve hours. If, at the end of this time, the color is not sufficiently deep, add to the bath several drops of ammonia, and let the print remain in it a minute or two longer, then rinse it in plenty of water. The prints thus obtained are very pretty, and resemble in color sepia drawings. Here are the formulæ for the different baths employed:

SENSITIZING SOLUTION.

Tartrate of iron and potash	15 grams.
Red prussiate of potash	12 grams.
Rain water	250 grams.

SOLUTION TO FADE THE PRINT.

Ammonia	100 grams.
Rain water	900 grams.

SOLUTION TO GIVE THE BROWN TINT.

Tannic acid	10 grams.
Rain water	500 grams.

A New Developer.—The following was communicated to the French Photographic Society:

Water	1000 c.c.
Sulphite	100 grams.

Dissolve in warm water, and add—

Metol	5 grams.
Hydroquinone	7 grams.

After solution—

Carbonate of potash	40 grams.
-------------------------------	-----------

This developer, which is very active and energetic, has the advantage of keeping without change in a stoppered bottle. For use it is well to dilute it with one-half water; the old bath may be used indefinitely by strengthening it with a little of the new bath. We may add that we have found it useful in using time plates to add a few drops of bromide.

A New Reducer for Dense Negatives.—

Water	3½ ounces.
Ferrous oxalate	80 grams.
Sulphite of soda	65 grams.
Oxalic acid	20 grams.
Hypo	6½ drams.

An Intensifier for Negatives Reproducing Lines.—

Water	1000 parts.
Iodine	14 parts.
Iodide of potassium	27 parts.

The negative is allowed to remain in this until entirely yellow. It is thoroughly washed, so that the water running from it is colorless. Afterward the negative is placed in a one per cent. solution of Schlippe's salt rendered alkaline by a little caustic soda.—*Paris Photo.*

To change blue prints to black they should be placed in water acidulated by nitric acid, then passed into a bath of water 100 parts, carbonate of soda 5 parts. The image turns to an orange color. It is immersed in a bath composed of water 100 parts, gallic acid 5 parts, and finally it is washed in water acidulated by hydrochloric acid.

Black Stain for Wood.—The intense black color that cabinet-makers produce is obtained by moistening the wood with dilute sulphuric acid, and afterwards gently heating. The following mixture answers well:

Sulphuric acid	1 ounce.
Water	8 ounces.

When cold add sugar in the proportion of 1 ounce to 10 fluid ounces.

Black Tones.—To obtain black tones on collodio-chloride papers by means of platinum is given in *Das Atelier Photographen*. The following is the formula:

“The celloidin paper is to be printed very deeply—much deeper than for ordinary gold toning. The washing must be done carefully, and it is better to add a little ammonia or salt to the second washing water, by means of which any chloride of silver remaining in a solu-

ble condition will be dissolved out. From the washing water the prints go direct into the following gold toning bath:

Water	1000 c.c.m.
Acetate of soda	15 grams.
Chloride of gold	1 gram.

This bath can be made to keep by Kuehn's method, adding a few drops of hydrochloric acid after use, and neutralizing with soda before using again. The prints go through the ordinary tones in this bath, and the toning is stopped when they have arrived at the usual bluish tone by transmitted light. They are then slightly washed and placed in the following platinum bath:

Chloro-platinite of potassium	1 gram.
Water	300 c.c.m.
Tartaric acid	15 grams.
Citric acid	5 grams.

In this bath the prints quickly become a deep velvety blue-black, which, if left too long, becomes a bluish grey. As soon as they show a pure blue black by transmitted light, free from any tinge of violet, the toning must be stopped to preserve the half tones. It is a good plan at first to treat thin slips of celloidin paper in exactly the same way as the prints, and to take these out of the toning bath from time to time—say every half minute—and test them by dropping nitric acid on them from a glass rod. When no change is brought about by the acid the platinum toning is complete. The prints are then slightly washed, fixed in hypo (1 to 10), and dried on blotting paper. The deep blue black tone changes to pure black in the fixing bath, and the prints have brilliant whites and great depths in the shadows.

RECENT PHOTOGRAPHIC PATENTS.

THE following list of patents issued to citizens of the United States is specially reported by Franklin H. Hough, Solicitor of American and Foreign Patents, No. 925 F Street, Washington, D. C.

527,315—Photographic burnisher, W. H. Boles, Syracuse, N. Y.

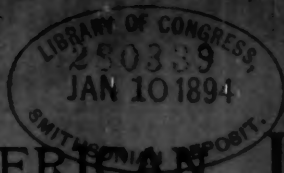
527,026—Photographic head and body rest, W. M. Gilson, Blanchard, Iowa.

528,140—J. E. Blackmore, Newark, N. Y.

528,176—Magazine camera, G. P. C. Merionez, Boulougne-sur-Mer, France.

527,841—Panoramic camera, M. Flammang, Newark, N. J.

\$2.00 per Year.



55 cts. per Copy.

AMERICAN JOURNAL OF PHOTOGRAPHY

AN ILLUSTRATED MONTHLY
DEVOTED TO PHOTOGRAPHY IN ITS
WIDEST SENSE

Vol. XV.

JANUARY, 1894.

No. 169.

CONTENTS.

	PAGE		PAGE
FRONTISPICE.—The Manilla, <i>Phila. Photo-Chromotype Co.</i>		THE EDITORIAL DROP-SHUTTER.—(a) Rewards for Meritorious Discoveries and Inventions, (b) A Serious Conflagration, (c) Miss Frances Johnson,	35
Salutatory, 1894,	I	PHOTOGRAPHIC HINTS AND FORMULÆ.—(a) A New Method of Toning Gelatino-Chloride Prints, (b) Boric Acid in the Combined Fixing and Toning bath, 42; (c) Blue Lantern Slides, (d) Chemical Engraving on Wood, 43; (e) Another Gas Cylinder Explosion,	46
The Zeiss Anastigmatic Lenses, <i>Prof. W. E. Burton,</i>	9	SOCIETY NOTES.—(a) Photographic Society of Philadelphia, (b) The Camera Club of Hartford, 45, (c) Worcester Camera Club,	50
Balloon Photogrammetry, <i>Prof. R. Meade Baugh,</i>	8	IN THE TWILIGHT HOUR,	47
Artistic Work on Negatives, <i>Xanthus Smith,</i>	13	LITERARY AND BUSINESS NOTES,	48
Photo-Etching on Zinc—Old St. David's Church, Photography in Travel [Illustrated],	15		
<i>Prof. Angelo Heilprin,</i>	19		
About Paper,	22		
The Practical Testing of Photographic Objectives, <i>Dr. Adolph Miska,</i>	23		
Composite Heliography,	29		
"The Oldest Sun Picture of the Human Countenance," <i>Julius R. Sachse,</i>	33		
OUR ILLUSTRATIONS.—The Manilla, Old St. David's Church,	39		

Subscriptions received in London, by Trübner & Co., 57 Ludgate Hill.
Agent in Germany, G. Hedeler, Grimmaischer Platz 9, Leipzig.

PHILADELPHIA:

THOS. H. McCOLLIN & CO., PUBLISHERS,

No. 1020 ARCH STREET.

INDEX TO ADVERTISEMENTS.

ALPHA ARISTOTYPE PAPER,	xxv.
AMERICAN PHOTO. PUBLISHING CO., The American Amateur Photographer,	xxiv.
ANTHONY, E. & I. T. & Co., Entrekin's Burnishers,	xxxii.
ANTHONY, E. & H. T. & Co., Cameras and Films,	3d page of cover.
ANTHONY, E. & H. T. & Co., "Aristo" Collodion Paper,	4th page of cover.
BARGAIN LIST,	i and ii.
BAUSCH & LOMB OPTICAL CO., Lenses and Shutters,	xix.
BEACON PUBLISHING CO., THE,	xxvii.
BLITZ-PULVER FLASH-LIGHT,	vii.
BLUE BOOK OF AMATEUR PHOTOGRAPHERS,	v.
BOUDROU, PROF. ALEXANDER, Miraculous Remedies,	xlili.
BRADFISCH & PIERCE, Aristotype and Matt Surface Papers,	ix.
BRYANT CO., J. W., Backgrounds,	xix.
BUFFALO ARGENTIC PAPER CO.,	x.
CANADIAN PHOTOGRAPHIC JOURNAL, The,	xxx.
CARBUTT, JOHN, Photographic Plates,	xxx.
COLLINS, A. M., MANUFACTURING CO., Photographic Card Stock,	xii.
COLUMBIAN COLLODION PAPER CO.,	xxii.
CRAMER, G., Dry Plate Works,	xviii.
CRESCENT DRUG AND CHEMICAL CO., Crescent Platinum Paper,	xxxv.
DAVIS, EDWIN, Photographic Backgrounds,	v.
DEXTER SHOE CO.,	xxiv.
DIAMOND ARISTOTYPE CO.,	xxix.
EASTMAN KODAK CO., "Solio" Paper,	xv.
EYE, THE, (Photographic Periodical, Weekly),	xliii.
FRENCH, BENJ. & Co., Lenses,	viii.
GENNERT, C., Photographic Supplies,	ii, xi.
GILBERT E. A., Aristotype Paper,	xxxvii.
GUNDLACH OPTICAL CO., Lenses,	xii.
HIGGINS, CHAS. M. & Co., Photo Mounter,	xxxi.
HOUGH, FRANKLIN H., Patents,	xxvii.
ILOTYPE COMPANY, Collodion Paper,	xliv.
INTERCHANGEABLE VIEW ALBUMS,	xxxiv.
KIRKLAND LITHIUM PAPER CO.,	xxii.
LONDON CHEMICAL CO., Hale's Photographic Specialties,	xxvii.
McKEE'S PRESS, Cameo, Imprint and Embossing Press,	xlii.
MOFFATT, G. J., Photographers' Envelopes,	xxviii.
MUNN & Co., Scientific American,	ix.
NEW YORK ARISTOTYPE CO., Photographic Supplies,	vi.
NEW YORK PHOTOGRAPHURE CO.,	x.
OSBORN, GEO. R., Easels, Photo. Holders and Hangers,	iv.
PACIFIC COAST PHOTOGRAPHER,	xvii.
PERFECTION BLUE PRINT PAPER,	xxviii.
PHILLIPS & JACOBS, Photographic Chemicals,	xvi.
PHOTO-AMERICAN, The,	xxviii.
PHOTOGRAPHIC TIMES, THE, Christmas Number,	xx.
PHOTO. MATERIALS CO., "Kloro" Paper	xiv.
PROSCH MFG. CO., Shutters and Flash Lamps,	xxxiii.
ROCHESTER OPTICAL CO., The "Premo" Camera,	xxiii.
THORNTON-PICKARD MFG. CO., Time Shutters,	xxxiii.
U. S. PHOTO SUPPLY CO.,	v.
WALPOLE DYE AND CHEMICAL CO., Photographic Chemicals,	xxvi.
WILKINSON CO., THE, Dixie Vignetter,	xxvi.
WILSON, EDWARD L., "Photographic Mosaics,"	xxxvi.
WOLF, GEO. J. & Co., Photographic Supplies,	xix.

\$2.00 per Year.

25 cts. per Copy.

AMERICAN JOURNAL OF PHOTOGRAPHY

AN ILLUSTRATED MONTHLY
DEVOTED TO PHOTOGRAPHY IN ITS
WIDEST SENSE

Vol. XV.

FEBRUARY, 1894.

No. 170.

CONTENTS.

	PAGE		PAGE
FRONTISPIECE.—F. Moller, <i>Godthaab, Greenland</i> .		Photographic Shoddy,	80
Professional Photography in the Arctic Regions [Illustrated], W. E. Meskan,	49	Photographing Meteors,	83
A Practical Flash Lamp [Illustrated],	53	PHOTOGRAPHIC HINTS AND FORMULÆ.—(a)	
Portrait, N. Sarony,	54	Blitz-Pulver Caution, 84; (b) Removing Pyro	
Double and Single Lanterns, Edmund Stirling,	56	Stains, 85; (c) To Silver Plate Aluminium, 85;	
The Equalization of Strong Contrasts in Negatives, Julius F. Sachs,	58	(d) The Best Polish for Lenses, 85; (e) Metol,	
A Perplexed Photographer,	60	26, (f) Mountant for Aristotypes,	86
Amateur Photography at the World's Fair, Horace Herbert Markley,	61	THE EDITORIAL DROP-SHUTTER.—(a) Our Con-	
Hydroxyl-Monohydride, J. Ficus Snappschotte,	69	temporaries, 87; (b) Ethnological Photogra-	
On Picture Hanging,	72	phy,	89
Judging Lantern Slides at Exhibitions,	73	PHOTOGRAPHIC SCISSORS AND PASTE.—(a) Pho-	
An Optical Illusion,	74	tographic Counterfeit Money, 90; (b) Sarah	
An Optical Display at the Exhibition,	75	Bernhardt and Her Picture, 91; (c) Tele-	
The Color Sensations,	76	Photography, 91; (d) Chinese Photography,	92
Patents on Backgrounds,	78	SOCIETY NOTES,	94
Discovery of the Telescope,	78	IN THE TWILIGHT HOUR,	95
The American Lantern Slide Exchange,	80	LITERARY AND BUSINESS NOTES,	96
Egyptian Photography,	81		

Subscriptions, *Postpaid*, by Trübner & Co., 57 Ludgate Hill.
Agent in Germany, G. Hedsler, Grimmalscher Steinweg 3, Leipzig.

PHILADELPHIA:

THOS. H. McCOLLIN & CO, PUBLISHERS,
No. 1030 ARCH STREET.

INDEX TO ADVERTISEMENTS.

ALPHA ARISTOTYPE PAPER,	xxv.
AMERICAN DRY PLATE CO.,	xliii.
AMERICAN PHOTO. PUBLISHING CO., The American Amateur Photographer,	xxiv.
ANTHONY, E. & H. T. & Co., Entrekin's Burnishers,	xxxii.
ANTHONY, E. & H. T. & Co., Cameras and Films,	xliv.
ANTHONY, E. & H. T. & Co., "Aristo" Collodion Paper,	4th page of cover.
BARGAIN LIST,	i and ii.
BAUSCH & LOMB OPTICAL CO., Lenses and Shutters,	ix.
BEACON PUBLISHING CO., THE,	xxvii.
BLITZ-PULVER FLASH-LIGHT,	vii.
BLUE BOOK OF AMATEUR PHOTOGRAPHERS,	-v.
BOUDROU, PROF. ALEXANDER, Miraculous Remedies,	xliii.
BRADFISCH & PIERCE, Aristotype and Matt Surface Papers,	ix.
BRYANT CO., J. W., Backgrounds,	xix.
BUFFALO ARGENTIC PAPER CO.,	x.
CANADIAN PHOTOGRAPHIC JOURNAL, The,	xxxii.
CARBUTT, JOHN, Photographic Plates,	xxx.
COLLINS, A. M., MANUFACTURING CO., Photographic Card Stock,	xii.
COLUMBIAN COLLODION PAPER CO.,	xxii.
CRAMER, G., Dry Plate Works,	xviii.
CRESCENT DRUG AND CHEMICAL CO., Crescent Platinum Paper,	xxxv.
DAVIS, EDWIN, Photographic Backgrounds,	v.
DEXTER SHOE CO.,	xxiv.
DIAMOND ARISTOTYPE CO.,	xxix.
EASTMAN KODAK CO., "Solio" Paper,	xv.
FRENCH, BENJ. & Co., Lenses,	viii.
GENNERT, C., Photographic Supplies,	ii, iv, xi.
GILBERT E. A., Aristotype Paper,	xxxvii.
GUNDLACH OPTICAL CO., Lenses,	xii.
HIGGINS, CHAS. M. & Co., Photo Mounter,	xxxii.
HOUGH, FRANKLIN H., Patents,	xxvii.
ILOTYPE COMPANY, Collodion Paper,	3d page of cover.
INTERCHANGEABLE VIEW ALBUMS,	xxxiv.
KIRKLAND LITHIUM PAPER CO.,	xxii.
LONDON CHEMICAL CO., Hale's Photographic Specialties,	xxvii.
McKEE'S PRESS, Cameo, Imprint and Embossing Press,	xlii.
MOFFATT, G. J., Photographers' Envelopes,	xxviii.
MUNN & Co., Scientific American,	ix.
NEW YORK ARISTOTYPE CO., Photographic Supplies,	vi.
NEW YORK PHOTOGRAPHURE CO.,	x.
OSBORN, GEO. R., Easels, Photo. Holders and Hangers,	iv.
PACIFIC COAST PHOTOGRAPHER,	xvii.
PERFECTION BLUE PRINT PAPER,	xxviii.
PHILLIPS & JACOBS, Photographic Chemicals,	xvi.
PHOTO-AMERICAN, THE,	xxviii.
PHOTOGRAPHIC TIMES, THE,	xx.
PHOTOGRAM, THE,	xli.
PHOTO. MATERIALS CO., "Kloro" Paper	xiv.
PROSCH MFG. CO., Shutters and Flash Lamps,	xxxiii.
RAMSPERGER & Co., H. C., Photographic Specialties,	xlii.
RECORD DRY PLATE CO.,	xiii.
ROCHESTER OPTICAL CO., The "Premo" Camera,	xxiii.
THORNTON-PICKARD MFG. CO., Time Shutters,	xxxiii.
U. S. PHOTO SUPPLY CO.,	v.
WALPOLE DYE AND CHEMICAL CO., Photographic Chemicals,	xxvi.
WESTERN COLLODION PAPER CO. (Kilborn & Kurtz),	xli.
WILKINSON CO., THE, Dixie Vignetter,	xxvi.
WILSON, EDWARD L., "Photographic Mosaics,"	xxxvi.
WOLF, GEO. J. & Co., Photographic Supplies,	xix.

\$2.00 per Year.



25 cts. per Copy.

AMERICAN JOURNAL OF PHOTOGRAPHY

AN ILLUSTRATED MONTHLY
DEVOTED TO PHOTOGRAPHY IN ITS
WIDEST SENSE

Vol. XV.

MARCH, 1894.

No. 171.

CONTENTS.

	PAGE		PAGE
FRONTISPIECE.—An Impromptu Group.		Recent Patents,	133
How Shall We Focus? [Translated from the German by <i>Julius F. Sackse</i>].	97	Minutes of Executive Committee Photographers' Association of America,	134
The Art of Illustration, <i>W. Lewis Fraser</i> ,	101	Commercial Rating,	140
Chemical Notation and Nomenclature of Photographic Workers, <i>Thomas Bolas</i> ,	104	A New National Park,	141
Photographic Society of Japan,	109	THE EDITORIAL DROP-SHUTTER.—(a) Art Lecture, 142; (b) Fine Animal Studies, 142; (c) N. Y. Aristotype Co., 142; (d) Blair Camera Co., 142; (e) A Correction, 142; (f) The Parvin Lens, 142; (g) Metol,	142
A Philadelphia Illustrator,	110	SOCIETY NOTES.—(a) St. Paul Camera Club, 143; (b) Boston Camera Club, 143; (c) California Camera Club, 143; (d) Society of Amateur Photographers of New York, 143; (e) Russia, 143; (f) Minneapolis Camera Club, 144; (g) Camera Club of Hartford, Conn., 144; (h) United Exhibitions at Milan, 1894, 144; (i) Obituary,	144
Picturesque Heads, <i>Xanthus Smith</i> ,	112		
ILLUSTRATION.—An Ancient Mariner,	113		
Fact, Fancy, or Prophecy—Which? . <i>J. F. Sackse</i> ,	116		
An Important Engraving,	118		
Lantern Screens,	119		
The Invention and Development of Photographic Papers,	120		
An Important Improvement in Dry Plates,	125		
Rulings of U. S. Treasury Department,	126		
Methods of Engraving [Illustrated],	128		

Subscriptions received in London, by Trübner & Co., 57 Ludgate Hill.
Agent in Germany, G. Hedelev, Grimmaischer Steinweg 3, Leipzig.

PHILADELPHIA:
THOS. H. McCOLLIN & CO, PUBLISHERS,
No. 1030 ARCH STREET.

INDEX TO ADVERTISEMENTS.

ALPHA ARISTOTYPE PAPER,	xxv.
AMERICAN DRY PLATE CO.,	xiii.
AMERICAN PHOTO. PUBLISHING CO., The American Amateur Photographer, .	xxiv.
ANTHONY, E. & H. T. & Co., Entrekin's Burnishers,	xxxii.
ANTHONY, E. & H. T. & Co., American "Aristo,"	xxxv.
ANTHONY, E. & H. T. & Co., "Aristo" Collodion Paper,	4th page of cover.
BARGAIN LIST,	i and ii.
BAUSCH & LOMB OPTICAL CO., Lenses and Shutters,	xix.
BEACON PUBLISHING CO., THE,	xxvii.
BLITZ-PULVER FLASH-LIGHT,	vii.
BLUE BOOK OF AMATEUR PHOTOGRAPHERS,	v.
BOUDROU, PROF. ALEXANDER, Miraculous Remedies,	ix.
BRADFISCH & PIERCE, Aristotype and Matt Surface Papers,	xvi.
BRYANT CO., J. W., Backgrounds,	xix.
BUFFALO ARGENTIC PAPER CO.,	x.
CANADIAN PHOTOGRAPHIC JOURNAL, The,	xxxii.
CARBUTT, JOHN, Photographic Plates,	xxx.
COLLINS, A. M., MANUFACTURING CO., Photographic Card Stock,	xii.
COLUMBIAN COLLODION PAPER CO.,	xxii.
CRAMER, G., Dry Plate Works,	xviii.
DEXTER SHOE CO.,	xxiv.
EASTMAN KODAK CO., Platino-Bromide Paper,	xv.
FRENCH, BENJ. & Co., Lenses,	viii.
GENNERT, C., Photographic Supplies,	ii, iv, xi.
GILBERT E. A., Aristotype Paper,	iv.
GUNDLACH OPTICAL CO., Lenses,	xii.
HARRY, ALBERT STAIR, Retouching Device,	v.
HIGGINS, CHAS. M. & Co., Photo Mounter,	xxxi.
HOUGH, FRANKLIN H., Patents,	xxvii.
ILOTYPE COMPANY, Collodion Paper,	3d page of cover.
INTERCHANGEABLE VIEW ALBUMS,	xxxiv.
LONDON CHEMICAL CO., Hale's Photographic Specialties,	xxvii.
McKEE'S PRESS, Cameo, Imprint and Embossing Press,	xxix.
MOFFATT, G. J., Photographers' Envelopes,	xxviii.
MUNN & Co., Scientific American,	ix.
NEW YORK ARISTOTYPE CO., Photographic Supplies,	vi.
NEW YORK PHOTOGRAPHURE CO.,	x.
ORTHOSCOPE LENSES,	xxi.
PACIFIC COAST PHOTOGRAPHER,	xvii.
PERFECTION BLUE PRINT PAPER,	xxxviii.
PHILLIPS & JACOBS, Photographic Chemicals,	xvi.
PHOTO-AMERICAN, The,	xxviii.
PHOTOGRAPHIC TIMES, THE,	xx.
PHOTOGRAM, THE,	xxxvii.
PHOTO. MATERIALS CO., "Kloro" Paper	xiv.
PROSCH MFG. CO., Shutters and Flash Lamps,	xxxiii.
RECORD DRY PLATE CO.,	xiii.
ROCHESTER OPTICAL CO., The "Premo" Camera,	xxiii.
STANLEY PLATE,	xxxvi.
THORNTON-PICKARD MFG. CO., Time Shutters,	xxxiii.
U. S. PHOTO SUPPLY CO.,	v.
WALPOLE DYE AND CHEMICAL CO., Photographic Chemicals,	xxvi.
WESTERN COLLODION PAPER CO. (Killborn & Kurtz),	xxxvii.
WILKINSON CO., THE, Dixie Vignetter,	xxvi.
WOLF, GEO. J. & Co., Photographic Supplies,	xix.

\$2.00 per Year.



25 cts. per Copy.

AMERICAN JOURNAL OF PHOTOGRAPHY

AN ILLUSTRATED MONTHLY
DEVOTED TO PHOTOGRAPHY IN ITS
WIDEST SENSE

Vol. XV.

APRIL, 1894.

No. 172.

CONTENTS.

	PAGE		PAGE
FRONTISPICE.—Portrait Studies.		for Wood, 184; (f) A French Stain, 184; (g)	
Methods of Engraving.—II.,	145	Combined Toning and Fixing Bath, 184; (A)	
Solio Prints by Development,	155	High Gloss Lubricator, 184; (i) Gelatine Sub-	
Commercial Metals,	157	stratum for Carbon Positives, 184; (j) Urani-	
Newspaper Art on Exhibition,	158	um Toning Bath, 185; (A) Rapid Hydrochi-	
Revelations of the Spectroscope,	160	none Developer, 185; (j) To Focus Enlarge-	
The Relative Permanency of Prints,	169	ments, 185; (m) Matt-Lack, 186; (u) Bright	
Card Mounts, C. H. Miller, 173		Prints,	186
Chemical Volation and Nomenclature for Photo-		SOCIETY NOTES.—(a) Photographic Society of	
graphic Workers.—II.,	174	Philadelphia, 187; (j) The Practical Photo-	
Society Reports, Julius F. Sachs, 179		grapher, 187; (c) California Camera Club, 187;	
Photographic Periodicals, [Translated from the		(d) Photographic Society of Japan, 187; (e) A	
Japanese,]	182	Premium Offer, 188; (f) Minneapolis Camera	
Photographic Hints and Formule.—(a) Develop-		Club,	188
oper for Bromide Paper, Sepia Tones, 183;		PHOTOGRAPHIC SCISSORS AND PASTE,	189
(b) An Aqueous Negative Varnish, 183; (c)		IN THE TWILIGHT HOUR,	191
Metol Hydrochinone Developers, 183; (d)		LITERARY AND BUSINESS NOTES,	190
Two-Solution Developer, 183; (e) Ebony Stains			

Subscriptions received in London, by Tribner & Co., 57 Ludgate Hill.
Agent in Germany, G. Hedeler, Grimmaischer Steinweg 3, Leipzig.

PHILADELPHIA:

THOS. H. McCOLLIN & CO, PUBLISHERS

No. 1030 ARCH STREET.

INDEX TO ADVERTISEMENTS.

ALPHA ARISTOTYPE PAPER,	xxv.
AMERICAN DRY PLATE CO.,	xiii.
AMERICAN PHOTO. PUBLISHING CO., The American Amateur Photographer, . .	xxiv.
ANDERSON, MACFARLANE, Sensitive Enamel,	v.
ANTHONY, E. & H. T. & Co., Entrekin's Burnishers,	xxxii.
ANTHONY, E. & H. T. & Co., American "Aristo,"	xxxv.
ANTHONY, E. & H. T. & Co., "Aristo" Collodion Paper,	4th page of cover.
BARGAIN LIST,	i and ii.
BAUSCH & LOMB OPTICAL CO., Lenses and Shutters,	xix.
BEACON PUBLISHING CO., THE,	xix.
BLITZ-PULVER FLASH-LIGHT,	vii.
BLUE BOOK OF AMATEUR PHOTOGRAPHERS,	v.
BOSTON CAMERA MFG. CO.,	xxxvii.
BOUDROU, PROF. ALEXANDER, Miraculous Remedies,	ix.
BRADFISCH & PIERCE, Aristotype and Matt Surface Papers,	xvi.
BRYANT CO., J. W., Backgrounds,	xix.
BUFFALO ARGENTIC PAPER CO.,	x.
CANADIAN PHOTOGRAPHIC JOURNAL, The,	xxxi.
CARBUTT, JOHN, Photographic Plates,	xxxix.
COLLINS, A. M., MANUFACTURING CO., Photographic Card Stock,	xii.
COLUMBIAN COLLODION PAPER CO.,	xxii.
CRAMER, G., Dry Plate Works,	xviii.
DEXTER SHOE CO.,	xxiv.
EASTMAN KODAK CO., Platino-Bromide Paper,	xv.
FRENCH, BENJ. & CO., Lenses,	viii.
GENNERT, C., Photographic Supplies,	ii, iv., xi.
GILBERT E. A., Aristotype Paper,	iv.
GUNDLACH OPTICAL CO., Lenses,	xii.
HIGGINS, CHAS. M. & Co., Photo Mounter,	xxxi.
HOUGH, FRANKLIN H., Patents,	xxvii.
ILOTYPE COMPANY, Collodion Paper,	3d page of cover.
INTERCHANGEABLE VIEW ALBUMS,	xxxiv.
KIRKLAND LITHIUM PAPER CO.,	xxii.
LONDON CHEMICAL CO., Hale's Photographic Specialties,	xxvii.
McKEE'S PRESS, Cameo, Imprint and Embossing Press,	xxix.
MUNN & CO., Scientific American,	ix.
NEW YORK ARISTOTYPE CO., Photographic Supplies,	vi.
NEW YORK PHOTOGRAPHURE CO.,	x.
ORTHOSCOPE LENSES,	xxi.
PACIFIC COAST PHOTOGRAPHER,	xvii.
PERFECTION BLUE PRINT PAPER,	xxxviii.
PHILLIPS & JACOBS, Photographic Chemicals,	xvi.
PHOTO-AMERICAN, The,	xxviii.
PHOTOGRAPHIC TIMES, THE,	xx.
PHOTOGRAM, THE,	xxxvii.
PHOTO. MATERIALS CO., "Kloro" Paper,	xiv.
PRESS CLAIMS CO., Patents, Pensions, etc.,	ix., xxxvi.
FROSCH MFG. CO., Shutters and Flash Lamps,	xxxiii.
RAMSFERGER, H. G. & CO., Photo Specialties,	xxvii.
RECORD DRY PLATE CO.,	xiii.
ROCHESTER OPTICAL CO., The "Premo" Camera,	xxiii.
THORNTON-PICKARD MFG. CO., Time Shutters,	xxxiii.
U. S. PHOTO SUPPLY CO.,	v.
WALPOLE DYE AND CHEMICAL CO., Photographic Chemicals,	xxvi.
WESTERN COLLODION PAPER CO. (Killborn & Kurtz),	xxxvii.
WILKINSON CO., THE, Dixie Vignetter,	xxvi.

\$2.00 per Year.



25 cts. per Copy.

AMERICAN JOURNAL OF PHOTOGRAPHY

AN ILLUSTRATED MONTHLY
DEVOTED TO PHOTOGRAPHY IN ITS
WIDEST SENSE

Vol. XV.

MAY, 1894.

No. 173.

CONTENTS.

FRONTISPIECE.	PAGE		PAGE
Simple Methods of Photographing with the Microscope, <i>B. Alex. Randall, M.D.</i> , 193		The Letters J and W, . . . <i>American Art Printer</i> , 223	
Has the Professional any use for the Hand Camera? [<i>Translated from the German by Julius F. Sachse</i>], 203		Increasing Contrasts in Photographs, 224	
Keep up Your Prices, <i>Xanthus Smith</i> , 206		The Seventh Annual Joint Exhibition, 225	
Suitable Retouching Surfaces, 209		The Sella Photographs, 231	
How Mirrors are Made, 212		Honor to a Photo-Scientist, 233	
Researches by Dr. R. Ed. Liesegang, 214		Book Illustration, 237	
A Letter from Secretary Reisch, 215		Thiosinamine, 237	
Visual Size-Distinctness, 217		PHOTOGRAPHIC HINTS AND FORMULÆ.—(a)	
Regarding the Treatment of Originals for Photo-Engraving, 219		New Objectives of Zeiss, Goerz and Steinheil, 238; (b) Mixtol, 238	
Instantaneous Photography,		SOCIETY NOTES.—(a) The Photographic Society of Philadelphia, 239; (b) The Minneapolis Camera Club, 239; (c) California Camera Club, 239	
<i>Captain W. de W. Abney</i> , 221		Recent Patents, 239	
		IN THE TWILIGHT HOUR, 240	

Subscriptions received in London, by Trübner & Co., 57 Ludgate Hill.
Agent in Germany, G. Hedeler, Grimmaischer Steinweg 3, Leipzig.

PHILADELPHIA:

THOS. H. McCOLLIN & CO, PUBLISHERS,

No. 1030 ARCH STREET.

INDEX TO ADVERTISEMENTS.

ALPHA ARISTOTYPE PAPER,	xxv.
AMERICAN DRY PLATE CO.,	xiii.
AMERICAN PHOTO. PUBLISHING CO., The American Amateur Photographer, .	xxiv.
ANDERSON, MACFARLANE, Sensitive Enamel,	v.
ANTHONY, E. & H. T. & Co., Entrekin's Burnishers,	xxxii.
ANTHONY, E. & H. T. & Co., American "Aristo,"	xxxv.
ANTHONY, E. & H. T. & Co., "Aristo" Collodion Paper,	4th page of cover.
BARGAIN LIST,	i and ii.
BAUSCH & LOMB OPTICAL CO., Lenses and Shutters,	xix.
BEACON PUBLISHING CO., THE,	xix.
BLITZ-PULVER FLASH-LIGHT,	vii.
BLUE BOOK OF AMATEUR PHOTOGRAPHERS,	v.
BOSTON CAMERA MFG. CO.,	xxxvii.
BOUDROU, PROF. ALEXANDER, Miraculous Remedies,	ix.
BRADFISCH & PIERCE, Aristotype and Matt Surface Papers,	xvi.
BRYANT CO., J. W., Backgrounds,	xix.
BUFFALO ARGENTIC PAPER CO.,	x.
CANADIAN PHOTOGRAPHIC JOURNAL, The,	xxxix.
CARBUTT, JOHN, Photographic Plates,	xxxix.
COLLINS, A. M., MANUFACTURING CO., Photographic Card Stock,	xii.
COLUMBIAN COLLODION PAPER CO.,	xxii.
CRAMER, G., Dry Plate Works,	xviii.
DEXTER SHOE CO.,	xxiv.
EASTMAN KODAK CO., Platino-Bromide Paper,	xv.
FRENCH, BENJ. & Co., Lenses,	viii.
GENNERT, C., Photographic Supplies,	ii., iv., xi.
GILBERT E. A., Aristotype Paper,	iv.
GUNDLACH OPTICAL CO., Lenses,	xii.
HIGGINS, CHAS. M. & Co., Photo Mounter,	xxxi.
HOUGH, FRANKLIN H., Patents,	xxvii.
ILOTYPE COMPANY, Collodion Paper,	3d page of cover.
INTERCHANGEABLE VIEW ALBUMS,	xxxiv.
KIRKLAND LITHIUM PAPER CO.,	xxii.
LENSES,	xl.
LONDON CHEMICAL CO., Hale's Photographic Specialties,	xxvii.
McKEE'S PRESS, Cameo, Imprint and Embossing Press,	xxix.
MUNN & Co., Scientific American,	ix.
NEW YORK ARISTOTYPE CO., Photographic Supplies,	vi.
NEW YORK PHOTOGRAPHURE CO.,	x.
ORTHOSCOPE LENSES,	xxi.
PACIFIC COAST PHOTOGRAPHER,	xvii.
PERFECTION BLUE PRINT PAPER,	xxxviii.
PHILLIPS & JACOBS, Photographic Chemicals,	xvi.
PHOTO-AMERICAN, The,	xxviii.
PHOTOGRAPHIC TIMES, THE,	xx.
PHOTOGRAM, THE,	xxxvii.
PHOTO. MATERIALS CO., "Kloro" Paper	xiv.
PRESS CLAIMS CO., Patents, Pensions, etc.,	ix., xxxvi.
PROSCH MFG. CO., Shutters and Flash Lamps,	xxxiii.
RECORD DRY PLATE CO.,	xiii.
ROCHESTER OPTICAL CO., The "Premo" Camera,	xxiii.
THORNTON-PICKARD MFG. CO., Time Shutters,	xxxiii.
U. S. PHOTO SUPPLY CO.,	v.
WALPOLE DYE AND CHEMICAL CO., Photographic Chemicals,	xxvi.
WESTERN COLLODION PAPER CO. (Killborn & Kurtz),	xxxvii.
WILKINSON CO., THE, Dixie Vignetter,	xxvi.

\$2.00 per Year.

25 cts. per Copy.

AMERICAN JOURNAL
OF
PHOTOGRAPHY

AN ILLUSTRATED MONTHLY
DEVOTED TO PHOTOGRAPHY IN ITS
WIDEST SENSE

Vol. XV.

JUNE, 1894.

No. 174.

CONTENTS.

	PAGE		PAGE
FRONTISPIECE.		277; (d) Kirkland Lithium Paper Company.	
Mannerism in Posing, <i>Julius F. Sachs</i> ,	241	278; (e) New Catalogue,	278
Dry Plates for Process Pictures,	244	PHOTOGRAPHIC HINTS AND FORMULÆ.—(a)	
The Polarisation of Light Practically Applied to		Packing Exposed Plates, 279; (b) Photography	
Photography, <i>Birt Acres</i> ,	247	in Colors, 279; (c) Boric Acid Nitrate of Lead,	
Color-Sensitive Plates,	255	279; (d) Bromide Prints in Various Colors,	
Photographing a Flying Bullet [Illustrated],	259	280; (e) Medium for Albumen Colors, 280;	
Photographic Properties of the Salts of Vanadium,		(f) Metol Potash Developer, 281; (g) Matt-	
<i>MM. A. and L. Lumiere</i> ,	261	Surface Paper, 281; (h) New Reducer for	
The Theory and Use of Uranium Compounds in		Chloride Prints,	281
Photography, <i>J. Vincent Elsdon</i> ,	262	PHOTOGRAPHIC SCISSORS AND PASTE.—(a) Lec-	
Retouching Large Heads,	263	tures on Color Photography, 282; (b) Explora-	
The American Lantern Slide Interchange,	264	tion Beyond Hudson Bay,	284
The Ohio Convention,	270	SOCIETY NOTES.—(a) The Photographic Society	
The St. Louis Convention of the P. A. of A.,	272	of Japan, 285; (b) California Camera Club,	285
Echoes of the Seventh Annual Joint Exhibition, . . .	273	IN THE TWILIGHT HOUR,	287
Our Frontispiece,	275	LITERARY AND BUSINESS NOTES,	288
THE EDITORIAL SHUTTER.—(a) Photographic			
Society of Philadelphia, 277; (b) <i>In vs</i> Society			
Reports, 277; (c) Composite Heliography,			

Subscriptions received in London, by Trübner & Co., 57 Ludgate Hill.
Agent in Germany, G. Hedeler, Grimmaischer Steinweg 3, Leipzig.

PHILADELPHIA:
THOS. H. McCOLLIN & CO, PUBLISHERS,
No. 1030 ARCH STREET.

INDEX TO ADVERTISEMENTS.

ALPHA ARISTOTYPE PAPER,	xxv.
AMERICAN DRY PLATE CO.,	xiii.
AMERICAN PHOTO. PUBLISHING CO., The American Amateur Photographer,	xxiv.
ANDERSON, MACFARLANE, Sensitive Enamel,	v.
ANTHONY, E. & H. T. & Co., Entrekin's Burnishers,	xxxii.
ANTHONY, E. & H. T. & Co., "Aristo" Collodion Paper,	4th page of cover.
BARGAIN LIST,	i and li.
BAUSCH & LOMB OPTICAL CO., Lenses and Shutters,	xix.
BEACON PUBLISHING CO., THE,	xix.
BLITZ-PÜLVER FLASH-LIGHT,	vii.
BLUE BOOK OF AMATEUR PHOTOGRAPHERS,	xxxiii.
BOSTON CAMERA MFG. CO.,	xxxvii.
BOUDROU, PROF. ALEXANDER, Miraculous Remedies,	ix.
BRADFISCH & PIERCE, Aristotype and Matt Surface Papers,	xvi.
BRYANT CO., J. W., Backgrounds,	xxviii.
BUFFALO ARGENTIC PAPER CO.,	x.
CANADIAN PHOTOGRAPHIC JOURNAL, The,	xxxi.
CARBUTT, JOHN, Photographic Plates,	xxxix.
COLLINS, A. M., MANUFACTURING CO., Photographic Card Stock,	xii.
COLUMBIAN COLLODION PAPER CO.,	xxii.
CRAMER, G., Dry Plate Works,	xviii.
DEXTER SHOE CO.,	xiv.
DIETZ RUBY LAMP,	xxxv.
EASTMAN KODAK CO., Platino-Bromide Paper,	xv.
FRENCH, BENJ. & Co., Lenses,	viii.
GENNERT, C., Photographic Supplies,	ii, iv., xi.
GILBERT E. A., Aristotype Paper,	iv.
GUNDLACH OPTICAL CO., Lenses,	xii.
HIGGINS, CHAS. M. & Co., Photo Mounter,	xxxi.
HOUGH, FRANKLIN H., Patents,	xxvii.
ILOTYPE COMPANY, Collodion Paper,	3d page of cover.
INTERCHANGEABLE VIEW ALBUMS,	xxxiv.
KIRKLAND LITHIUM PAPER CO.,	xxii.
LENSES,	xl.
LONDON CHEMICAL CO., Hale's Photographic Specialties,	xxvii.
McKEE'S PRESS, Cameo, Imprint and Embossing Press,	xxix.
MUNN & Co., Scientific American,	ix.
NEW YORK ARISTOTYPE CO., Photographic Supplies,	vi.
NEW YORK PHOTOGRAPHURE CO.,	x.
ORTHOSCOPE LENSES,	xxi.
PACIFIC COAST PHOTOGRAPHER,	xvii.
PERFECTION BLUE PRINT PAPER,	xxxviii.
PHILLIPS & JACOBS, Photographic Chemicals,	xvi.
PHOTO-AMERICAN, The,	xxviii.
PHOTOGRAPHIC TIMES, THE,	xx.
PHOTOGRAM, THE,	v.
PHOTO. MATERIALS CO., "Kloro" Paper	xiv.
PRESS CLAIMS CO., Patents, Pensions, etc.,	ix., xxxvi.
PROSCH MFG. CO., Shutters and Flash Lamps,	xxxiii.
RAMSPERGER, H. G. & Co., Photo Specialties,	xxxv.
RECORD DRY PLATE CO.,	xiii.
ROCHESTER OPTICAL CO., The "Premo" Camera,	xxiii.
SPRAGUE SCHOOL OF LAW,	xxvii.
THORNTON-PICKARD MFG. CO., Time Shutters,	xxxiii.
U. S. PHOTO SUPPLY CO.,	v.
WALPOLE DYE AND CHEMICAL CO., Photographic Chemicals,	xxvi.
WESTERN COLLODION PAPER CO. (Killborn & Kurtz),	xxxvii.
WILKINSON CO., THE, Dixie Vignetter,	xxvi.

\$2.00 per Year.



25 cts. per Copy.

AMERICAN JOURNAL OF PHOTOGRAPHY

AN ILLUSTRATED MONTHLY
DEVOTED TO PHOTOGRAPHY IN ITS
WIDEST SENSE

Vol. XV.

JULY, 1894.

No. 175.

CONTENTS.

	PAGE		PAGE
FRONTISPICE—(a) An Eastman Platino-Bromide Paper; (b) Lafayette—A Photo-Chromotype by the Photo-Chromotype Co. of Philadelphia.		hyde on Gelatine, 323; (b) Action of Light on Salts of Tungsten, 323; (c) Intensification with Pigmentary Matter of Silver and Platinum Images, 323; (d) Reducing Negatives, 323; (e) Anaglyphs,	323
The Ives Chromogram [Illustrated],	289	PHOTOGRAPHIC HINTS AND FORMULÆ.—(a) A Developer for Flash Light Negatives, 324; (b) Separate (Kirkland) Toning and Fixing Baths, 324; (c) Color Sensibilizers for Photo-Micrography, 326; (d) Aristotype Papers in Summer, 327; (e) Metal-Soda Developer, 327; (f) Chlor-Aurate of Silver, 327; (g) Sensitometer Numbers (Carbutt's), 328; (h) Directions for Using Eastman's Platino-Bromide Paper, 329	
Are Our Portrait Lenses Up to Date? [From the <i>German</i>],	291	A Series of Fine Negatives,	330
Photography as an Aid in Detecting Crime, . . .	294	OUR ILLUSTRATIONS.—(a) Our Platino-Bromide Frontispiece, 331; (b) Lafayette—A Photo-Chromotype, 331; (c) United States Cruiser "Columbia,"	332
Rembrandt Lighting, <i>Xanthus Smith</i> , 296		The Eastman Kodak Patents,	332
Printing Carbon Work,	300	SOCIETY NOTES.—(a) The Photographic Society of Philadelphia, 333; (b) Photographic Catalogue, 333; (c) Photographic Societies in California and Japan, 333; (d) Royal Cornwall Exhibition, 334; (e) Photographic Society of Great Britain, 335; (f) California Camera Club, 335	
The Treatment of Lenses, <i>Gaston Niezwenglowski</i> , 301			
The Turkeytown Hypo Club,	303		
The Proper Density in Portrait Negatives, . . .	306		
A Sample Apparatus to Exemplify the Principles of the Photo-Chromoscope, <i>Capt. Abney, C.B.</i> , 310			
Celestial Photography, <i>Dr. A. H. Fison</i> , 315			
Test for Nitrates,	317		
Class Record of the Camera Club, U. of Pa., '94, . .	318		
Gigantic Leaves,	319		
Permanency of the Latent or Undeveloped Image, <i>C. H. Bathamley</i> 320			
Official Program of Convention P. A. of A., . . .	321		
Abstracts from Transactions of British Photographic Society—(a) Action of Formic Alde-			

Subscriptions received in London, by Trübner & Co., 57 Ludgate Hill,
Agent in Germany, G. Hedeler, Grimmalscher Steinweg 3, Leipzig.

PHILADELPHIA:

THOS. H. McCOLLIN & CO., PUBLISHERS,

No. 1080 ARCH STREET.

INDEX TO ADVERTISEMENTS.

ALPHA ARISTOTYPE PAPER,	xxv.
AMERICAN DRY PLATE CO.,	xiii.
AMERICAN PHOTO. PUBLISHING CO., The American Amateur Photographer, .	xxiv.
ANDERSON, MACFARLANE, Sensitive Enamel,	v.
ANTHONY, E. & H. T. & Co., Entrek's Burnishers,	xxxii.
ANTHONY, E. & H. T. & Co., "Aristo" Collodion Paper,	4th page of cover.
BARGAIN LIST,	i and ii.
BAUSCH & LOMB OPTICAL CO., Lenses and Shutters,	xix.
BEACON PUBLISHING CO., THE,	xix.
BLITZ-PULVER FLASH-LIGHT,	xxxiv.
BLUE BOOK OF AMATEUR PHOTOGRAPHERS,	xxxix.
BOSTON CAMERA MFG. CO.,	xxxvii.
BOUDROU, PROF. ALEXANDER, Miraculous Remedies,	ix.
BRADFISCH & PIERCE, Aristotype and Matt Surface Papers,	xvi.
BRYANT CO., J. W., Backgrounds,	xxviii.
BUFFALO ARGENTIC PAPER CO.,	x.
CANADIAN PHOTOGRAPHIC JOURNAL, The,	xxxi.
CARBUTT, JOHN, Photographic Plates,	vii.
COLLINS, A. M., MANUFACTURING CO., Photographic Card Stock,	xii.
COLUMBIAN COLLODION PAPER CO.,	xxii.
CRAMER, G., Dry Plate Works,	xviii.
DEXTER SHOE CO.,	xxiv.
DIETZ RUBY LAMP,	xxxix.
EASTMAN KODAK CO., Enameled Bromide and Platino-Bromide Papers, . .	xv.
FRENCH, BRNJ. & CO., Lenses,	viii.
GENNERT, C., Photographic Supplies,	ii, xi.
GILBERT E. A., Aristotype Paper,	iv.
GUNDLACH OPTICAL CO., Lenses,	xii.
HIGGINS, CHAS. M. & Co., Photo Mounter,	xxxix.
HOUGH, FRANKLIN H., Patents,	xl.
ILOTYPE COMPANY, Collodion Paper,	3d page of cover.
INTERCHANGEABLE VIEW ALBUMS,	xxvii.
KIRKLAND LITHIUM PAPER CO.,	xxii.
LENSES,	xxxviii.
LONDON CHEMICAL CO., Hale's Photographic Specialties,	xl.
MUNN & CO., Scientific American,	ix.
NEW YORK ARISTOTYPE CO., Photographic Supplies,	vi.
NEW YORK PHOTOGRAVURE CO.,	x.
ORTHOSCOPE LENSES,	xxi.
PACIFIC COAST PHOTOGRAPHER,	xvii.
PERFECTION BLUE PRINT PAPER,	xxix.
PHILLIPS & JACOBS, Photographic Chemicals,	xvi.
PHOTO-AMERICAN, The,	xxviii.
PHOTOGRAPHIC TIMES, THE,	xx.
PHOTOGRAM, THE,	v.
PHOTO. MATERIALS CO., "Kloro" Paper	xiv.
PRESS CLAIMS CO., Patents, Pensions, etc.,	ix, xxxvi.
PROSCH MFG. CO., Shutters and Flash Lamps,	xxxv.
RECORD DRY PLATE CO.,	xiii.
ROCHESTER OPTICAL CO., The "Premo" Camera,	xxiii.
SCHERING, E., Pyrogallie Acid Developer,	xxxiii.
SPRAGUE SCHOOL OF LAW,	xl.
THORNTON-PICKARD MFG. CO., Time and Instantaneous Shutters,	xxxv.
UNITED STATES ARISTOTYPE CO.,	xl.
U. S. PHOTO SUPPLY CO.,	v.
WALPOLE DYE AND CHEMICAL CO., Photographic Chemicals,	xxvi.
WESTERN COLLODION PAPER CO. (Killborn & Kurtz),	xxxvii.
WILKINSON CO., THE, Dixie Vignetter,	xxvi.



\$2.00 per Year.

25 cts. per Copy.

AMERICAN JOURNAL OF PHOTOGRAPHY

AN ILLUSTRATED MONTHLY
DEVOTED TO PHOTOGRAPHY IN ITS
WIDEST SENSE

Vol. XV.

AUGUST, 1894.

No. 176.

CONTENTS.

	PAGE		PAGE
FRONTISPIECE.—Views of the Scenery of British Columbia, By Wm. H. Rau.		Rembrandt Effects in Photography,	376
Photography at the Antwerp Exhibition, f. Focus Snappschotte, 337		PHOTOGRAPHIC HINTS AND FORMULÆ.—(a)	
Photographers at Home and Abroad, 343		Favorite English Developers, 377; (b) Carbon	
The Best Light, Sigmar Mehring, 349		Work, 377; (c) Castor Oil and Glycerine in	
Hard Times, 351		Collodio-Chloride Emulsions, 377; (d) Color	
A Pennsylvania-Dunker Photographer, Julius P. Sachs, 353		Screens, 378; (e) Thiocarbamid for Removing	
Making Paper Adhere to Metal, 356		Yellow Stains, 378; (f) Dust on Plates, 378;	
Suitable Retouching Surfaces, 357		(g) Developer Stains on Negatives, 379; (h)	
A Professional to Professionals, John Stuart, 360		To Recover Fogged Plates, 379; (i) To Print	
The Study of Portraiture, 360		in a Background, 379; (j) Lumiere Bromo-	
Test for Free Sulphur, 364		Gelatine Dry Plates, 380	
A Theory of Vision, 365		PHOTOGRAPHIC SCISSORS AND PASTE.—(a) A	
The Primary Color Theory in Japan, 367		Boon for Travelers and Tourists, 381; (b) Mr.	
Dr Dallinger on the Genesis of the Lens and the		Ives' Return, 381; (c) Photography of the Eye,	
Microscope, 368		381; (d) A Camera Detective, 382; (e) A New	
Practical Collotype Printing, 369		Light Sensitive Iron Salt, 382; (f) Learn a	
Ether Saturators, 371		Trade and be Master of It, 383	
An Embryo Photographer, 374		Recent Patents, 383	
Our Illustrations, 375		LITERARY AND BUSINESS NOTES, 384	
		IN THE TWILIGHT HOUR, 384	

Subscriptions received in London, by Trübner & Co., 57 Ludgate Hill.
Agent in Germany, G. Hedeler, Grimmaischer Steinweg 3, Leipzig.

PHILADELPHIA:
THOS. H. MCCOLLIN & CO., PUBLISHERS
No. 1030 ARCH STREET.

INDEX TO ADVERTISEMENTS.

ALPHA ARISTOTYPE PAPER,	xxv.
AMERICAN DRY PLATE CO.,	xiii.
AMERICAN PHOTO. PUBLISHING CO., The American Amateur Photographer,	xxiv.
ANDERSON, MACFARLANE, Sensitive Enamel,	v.
ANTHONY, E. & H. T. & Co., Entreklin's Burnishers,	xxxii.
ANTHONY, E. & H. T. & Co., "Aristo" Collodion Paper,	4th page of cover.
BARGAIN LIST,	i and ii.
BAUSCH & LOMB OPTICAL CO., Lenses and Shutters,	xix.
BEACON PUBLISHING CO., THE,	xix.
BLITZ-PULVER FLASH-LIGHT,	xxxiv.
BLUE BOOK OF AMATEUR PHOTOGRAPHERS,	xxxix.
BOSTON CAMERA MFG. CO.,	xxxvii.
BOUDROU, PROF. ALEXANDER, Miraculous Remedies,	ix.
BRADFISCH & PIERCE, Aristotype and Matt Surface Papers,	xvi.
BRYANT CO., J. W., Backgrounds,	xxviii.
BUFFALO ARGENTIC PAPER CO.,	x.
CANADIAN PHOTOGRAPHIC JOURNAL, The,	xxxix.
CARBUTT, JOHN, Photographic Plates,	vii.
COLLINS, A. M., MANUFACTURING CO., Photographic Card Stock,	xii.
COLUMBIAN COLLODION PAPER CO.,	xxii.
CRAMER, G., Dry Plate Works,	xviii.
DEXTER SHOE CO.,	xxiv.
DIETZ RUBY LAMP,	xxxix.
EASTMAN KODAK CO., Enameled Bromide and Platino-Bromide Papers,	xv.
FRENCH, BENJ. & Co., Lenses,	viii.
GENNERT, C., Photographic Supplies,	ii., xi.
GILBERT E. A., Aristotype Paper,	iv.
GUNDLACH OPTICAL CO., Lenses,	xii.
HIGGINS, CHAS. M. & Co., Photo Mounter,	xxxix.
HOUGH, FRANKLIN H., Patents,	xi.
ILOTYPE COMPANY, Collodion Paper,	3d page of cover.
INTERCHANGEABLE VIEW ALBUMS,	xxvii.
KIRKLAND LITHIUM PAPER CO.,	xxii.
LENSES,	xxxviii.
LONDON CHEMICAL CO., Hale's Photographic Specialties,	xi.
MUNN & Co., Scientific American,	ix.
NEW YORK ARISTOTYPE CO., Photographic Supplies,	vi.
NEW YORK PHOTOGRAPHURE CO.,	x.
ORTHOSCOPE LENSES,	xxi.
PACIFIC COAST PHOTOGRAPHER,	xvii.
PERFECTION BLUE PRINT PAPER,	xxix.
PHILLIPS & JACOBS, Photographic Chemicals,	xvi.
PHOTO-AMERICAN, The,	xxviii.
PHOTOGRAPHIC TIMES, THE,	xx.
PHOTOGRAM, THE,	v.
PRESS CLAIMS CO., Patents, Pensions, etc.,	ix., xxxvi.
PROSCH MFG. CO., Shutters and Flash Lamps,	xxxv.
RAMSPERGER, H. G. & Co., Photo Specialties,	xiv.
RECORD DRY PLATE CO.,	xiii.
ROCHESTER OPTICAL CO., The "Premo" Camera,	xxiii.
SCHERING, E., Pyrogallic Acid Developer,	xxxiii.
SPRAGUE SCHOOL OF LAW,	xi.
THORNTON-PICKARD MFG. CO., Time and Instantaneous Shutters,	xxxv.
UNITED STATES ARISTOTYPE CO.,	xi.
U. S. PHOTO SUPPLY CO.,	v.
WALPOLE DYE AND CHEMICAL CO., Photographic Chemicals,	xxvi.
WESTERN COLLODION PAPER CO. (Killborn & Kurtz),	xxxvii.
WILKINSON CO., THE, Dixie Vignetter,	xxvi.
WILSON, EDWARD L., Photographic Literature,	xiv.

\$2.00 per Year.



25 cts. per Copy.

AMERICAN JOURNAL OF PHOTOGRAPHY

AN ILLUSTRATED MONTHLY
DEVOTED TO PHOTOGRAPHY IN ITS
WIDEST SENSE

Vol. XV.

SEPTEMBER, 1894.

No. 177.

CONTENTS.

	PAGE		PAGE
FRONTISPIECE.—"Before the Mirror."		PHOTOGRAPHIC HINTS AND FORMULÆ.—(a)	
Present and Future Possibilities of Photography,		A Chemical Ink, 426; (b) Sepia Tone on	
<i>Leon Vidal</i> , 385		Chloride Prints, 426; (c) Total Local Repro-	
How a Lens Does Its Work: A Lesson in Ele-		duction, 426; (d) A Hint to Picture Dealers,	
mentary Optics, <i>Clement J. Leaper</i> , 391		426; (e) Use of Vanadium in Actinometry, 427;	
The Photography of Difficult Subjects, 394		(f) Faces and Costumes, 427; (g) Production	
Dusting Albumen Process, <i>Henry Calmels</i> , 398		of Colors in Glass, 427; (h) Exposure Meter,	
Convention Exhibits, P. A. of A., 401		428; (i) To Secure Permanent Pictures, 428;	
The Reproduction of Red in Oil Paintings, 401		(j) Process Work, 428; (k) Direct Reproduc-	
An Artistic Design for Book Cover, 411		tion, 428	
The Eastman Patents, 412		PHOTOGRAPHIC SCISSORS AND PASTE.—(a) Tele-	
Collogravure, 417		scopes of the Future, 429; (b) Signatures on	
Photographed a Spirit, 419		Pictures, 430; (c) To Photograph Reprints,	
Orthochromatic Photography, 421		430; (d) An Infallible Witness, 431	
World's Fair Pictures, 424		Recent Patents, 431	
Language of Precious Stones, 425		IN THE TWILIGHT HOUR, 432	

Subscriptions received in London, by Trübner & Co., 57 Ludgate Hill.
Agent in Germany, G. Hedeler, Grimmaischer Steinweg 3, Leipzig.

PHILADELPHIA:
THOS. H. McCOLLIN & CO., PUBLISHERS
No. 1030 ARCH STREET.

INDEX TO ADVERTISEMENTS.

ALPHA ARISTOTYPE PAPER,	xxv.
AMERICAN DRY PLATE CO.,	xiii.
AMERICAN PHOTO. PUBLISHING CO., The American Amateur Photographer, .	xxiv.
ANDERSON, MACFARLANE, Sensitive Enamel,	v.
ANTHONY, E. & H. T. & Co., Entrekin's Burnishers,	xxxii.
ANTHONY, E. & H. T. & Co., "Aristo" Collodion Paper,	4th page of cover.
BARGAIN LIST,	i and ii.
BAUSCH & LOMB OPTICAL CO., Lenses and Shutters,	xix.
BEACON PUBLISHING CO., THE,	xix.
BLITZ-PULVER FLASH-LIGHT,	xxxiv.
BLUE BOOK OF AMATEUR PHOTOGRAPHERS,	xxxv.
BOSTON CAMERA MFG. CO.,	xxxvii.
BOUDROU, PROF. ALEXANDER, Miraculous Remedies,	ix.
BRADFISCH & PIERCE, Aristotype and Matt Surface Papers,	xvi.
BRYANT CO., J. W., Backgrounds,	xxviii.
BUFFALO ARGENTIC PAPER CO.,	xxii.
CANADIAN PHOTOGRAPHIC JOURNAL, The,	xxxii.
CARBUTT, JOHN, Photographic Plates,	vii.
COLLINS, A. M., MANUFACTURING CO., Photographic Card Stock,	xii.
CRAMER, G., Dry Plate Works,	xviii.
DEXTER SHOE CO.,	xxiv.
DIETZ RUBY LAMP,	xxxv.
DRESDEN PHOTO-PAPER WORKS, Albumen Paper Pensée,	xi.
EASTMAN KODAK CO., Enameled Bromide and Platino-Bromide Papers, . . .	xv.
FRENCH, BENJ. & Co., Lenses,	viii.
GENNERT, C., Photographic Supplies,	ii., xi.
GILBERT E. A., Aristotype Paper,	iv.
GUNDLACH OPTICAL CO., Lenses,	xii.
HIGGINS, CHAS. M. & Co., Photo Mounter,	xxxii.
HOUGH, FRANKLIN H., Patents,	xxxix.
ILOTYPE COMPANY, Collodion Paper,	3d page of cover.
INTERCHANGEABLE VIEW ALBUMS,	xxvii.
KIRKLAND LITHIUM PAPER CO.,	xxii.
LENSES,	xxxviii.
LONDON CHEMICAL CO., Hale's Photographic Specialties,	xxxix.
MANHATTAN OPTICAL CO., Lenses,	x.
MUNN & Co., Scientific American,	ix.
NEW YORK ARISTOTYPE CO., Photographic Supplies,	vi.
ORTHOSCOPE LENSES,	xxi.
PACIFIC COAST PHOTOGRAPHER,	xvii.
PACKARD BROS., Scenic Productions,	x.
PERFECTION BLUE PRINT PAPER,	xxix.
PHILLIPS & JACOBS, Photographic Chemicals,	xvi.
PHOTO-AMERICAN, The,	xxviii.
PHOTOGRAPHIC TIMES, THE,	xx.
PHOTOGRAM, THE,	v.
PRESS CLAIMS CO., Patents, Pensions, etc.,	ix., xxxvi.
PROSCH MFG. CO., Shutters and Flash Lamps,	xxxv.
RECORD DRY PLATE CO.,	xiii.
ROCHESTER OPTICAL CO., The "Premo" Camera,	xxiii.
SCHERING, E., Pyrogallie Acid Developer,	xxxiii.
SPRAGUE SCHOOL OF LAW,	xxix.
THORNTON-PICKARD MFG. CO., Time and Instantaneous Shutters,	xxxix.
UNITED STATES ARISTOTYPE CO.,	xiv.
U. S. PHOTO SUPPLY CO.,	v.
WALPOLE DYE AND CHEMICAL CO., Photographic Chemicals,	xxvi.
WESTERN COLLODION PAPER CO. (Killborn & Kurtz),	xxxvii.
WILKINSON CO., THE, Dixie Vignetter,	xxvi.
WILSON, EDWARD L., Photographic Literature,	xiv.

\$2.00 per Year.



25 cts. per Copy.

AMERICAN JOURNAL OF PHOTOGRAPHY

AN ILLUSTRATED MONTHLY
DEVOTED TO PHOTOGRAPHY IN ITS
WIDEST SENSE

Vol. XV.

OCTOBER, 1894.

No. 178.

CONTENTS.

	PAGE		PAGE
FRONTISPIECE.—A Saw Mill at Zaandam, Holland. In the Land of Dykes and Windmills, [Illustrated]. <i>J. Focus Snapichotte</i> , 433		THE EDITORIAL DROPSHUTTER.—(a) A New Photographic Shutter, 472; (b) Panchromatic Plates, 472; (c) A Photographic Exhibition, .	473
Three Methods for the Detection of Forgery, <i>Dr. Persifer Fraser</i> , 441		PHOTOGRAPHIC HINTS AND FORMULÆ.—(a) Developing Prints on Albuminised Paper, 473; (b) Impurities of Cardboard, 473; (c) Developers, 474; (d) Jena Glass,	474
New Researches on the "Infra-Red Region" of the Solar Spectrum, <i>Prof. Langley</i> , 443		PHOTOGRAPHIC SCISSORS AND PASTE.—(a) Pho- tograph Frames, 475; (b) An Electric Toy, 475; (c) Aluminium Matches, 475; (d) Luminosity of a Candle Flame, 476; (e) New Mode of Coloring Scientific Lantern Slides, 476; (f) A National Photographic School, 477; (g) Sealing Wax Etiquette, 477; (h) Excess Postage, 477; (i) A Great Telescope, 478; (j) A Misleading Paragraph,	478
What To Do and What Not To Do to Get a Speaking Likeness,	447	IN THE TWILIGHT HOUR,	479
Popular Talks on Law, <i>Wm. C. Sprague</i> , 449		LITERARY AND BUSINESS NOTES,	480
The Differences in Processes of Film-Making, <i>T. H. Blair</i> , 452			
Unsuspected,	455		
The Half-Tone Process, <i>William Skaw</i> , 457			
Recent Experiments in Electricity,	460		
Dr. Eder on the Action of Bromide with Various Developers,	462		
Flash-Light Portraits,	463		
Duplicating Negatives in Reverse Position,	465		
Portraiture,	468		

Subscriptions received in London, by Trübner & Co., 57 Ludgate Hill.
Agent in Germany, G. Hedeler, Grimmaischer Steinweg 3, Leipzig.

PHILADELPHIA:
THOS. H. McCOLLIN & CO., PUBLISHERS
No. 1030 ARCH STREET.

INDEX TO ADVERTISEMENTS.

ALPHA ARISTOTYPE PAPER,	xxv.
AMERICAN DRY PLATE CO.,	xiii.
ANDERSON, MACFARLANE, Sensitive Enamel,	v.
ANTHONY, E. & H. T. & Co., Entrekin's Burnishers,	xxxii.
ANTHONY, E. & H. T. & Co., "Aristo" Collodion Paper,	4th page of cover.
BARGAIN LIST,	i and ii.
BAUSCH & LOMB OPTICAL CO., Lenses and Shutters,	xix.
BEACON PUBLISHING CO., THE,	xix.
BLITZ-PULVER FLASH-LIGHT,	xxxiv.
BLUE BOOK OF AMATEUR PHOTOGRAPHERS,	xxxv.
BOSTON CAMERA MFG. CO.,	xxxvii.
BOUDROU, PROF. ALEXANDER, Miraculous Remedies,	ix.
BRADFISCH & PIERCE, Aristotype and Matt Surface Papers,	xvi.
BRYANT CO., J. W., Backgrounds,	xxviii.
BUFFALO ARGENTIC PAPER CO.,	xxii.
CANADIAN PHOTOGRAPHIC JOURNAL, THE,	xxxi.
CARBUTT, JOHN, Photographic Plates,	vii.
COLLINS, A. M., MANUFACTURING CO., Photographic Card Stock,	xii.
CRAMER, G., Dry Plate Works,	xviii.
DARLINGTON'S HANDBOOK,	xxiv.
DEXTER SHOE CO.,	xxiv.
DIETZ RUBY LAMP,	xxxv.
DRESDEN PHOTO-PAPER WORKS, Albumen Paper Pensée,	xi.
EASTMAN KODAK CO., Enameled Bromide and Platino-Bromide Papers,	xv.
FRENCH, BENJ. & CO., Lenses,	viii.
GENNERT, C., Photographic Supplies,	ii, xi.
GILBERT E. A., Aristotype Paper,	iv.
GUNDLACH OPTICAL CO., Lenses,	xii.
HIGGINS, CHAS. M. & CO., Photo Mounter,	xxxi.
HOUGH, FRANKLIN H., Patents,	xxxix.
ILOTYPE COMPANY, Collodion Paper,	3d page of cover.
INTERCHANGEABLE VIEW ALBUMS,	xxvii.
KIRKLAND LITHIUM PAPER CO.,	xxii.
LAVETTE'S PATENT ENVELOPE,	xxxviii.
LONDON CHEMICAL CO., Hale's Photographic Specialties,	xxxix.
MANHATTAN OPTICAL CO., Lenses,	x.
MUNN & CO., Scientific American,	ix.
NEW YORK ARISTOTYPE CO., Photographic Supplies,	vi.
ORTHOSCOPE LENSES,	xxi.
PACIFIC COAST PHOTOGRAPHER,	xvii.
PACKARD BROS., Scenic Productions,	x.
PERFECTION BLUE PRINT PAPER,	xxix.
PHILLIPS & JACOBS, Photographic Chemicals,	xvi.
PHOTO-AMERICAN, THE,	xxxviii.
PHOTOGRAM, THE,	v.
PRESS CLAIMS CO., Patents, Pensions, etc.,	ix, xxxvi.
PROSCH MFG. CO., Shutters and Flash Lamps,	xxxv.
RAMSPERGER, H. G. & CO., Photo Specialties,	xxiv.
RECORD DRY PLATE CO.,	xiii.
ROCHESTER OPTICAL CO., THE "Premo" Camera,	xxiii.
SCOVILL & ADAMS CO., THE, Merck's Pyrogallie Acid,	xx.
SCHERING, E., Pyrogallie Acid Developer,	xxxiii.
SPRAGUE SCHOOL OF LAW,	xxxix.
THORNTON-PICKARD MFG. CO., Time and Instantaneous Shutters,	xxxix.
UNITED STATES ARISTOTYPE CO.,	xiv.
U. S. PHOTO SUPPLY CO.,	v.
WALPOLE DYE AND CHEMICAL CO., Photographic Chemicals,	xxvi.
WESTERN COLLODION PAPER CO. (Killborn & Kurtz),	xxxvii.
WILKINSON CO., THE, Dixie Vignetter,	xxvi.
WILSON, EDWARD L., Photographic Literature,	xiv.

\$2.00 per Year.



25 cts. per Copy.

AMERICAN JOURNAL OF PHOTOGRAPHY

AN ILLUSTRATED MONTHLY
DEVOTED TO PHOTOGRAPHY IN ITS
WIDEST SENSE

Vol. XV.

NOVEMBER, 1894.

No. 179.

CONTENTS.

	PAGE		PAGE
FRONTISPIECE.—Industrial Photography,		THE EDITORIAL DROP SHUTTER.—(a) French	
Industrial Photography, <i>Julius F. Sachs</i> ,	487	Art, 518; (b) An Encyclopedia Photographica,	
Notes on Development, <i>John Carbutt</i> ,	486	518; (c) Photo-Chemical Studies, 519; (d)	
Herrmann Von Helmholtz,	487	Wilson's "Cyclopaedic Photography," 519;	
The Ideal Dark Room,	491	(e) "The New Science Review," 520; (f)	
Plain Words, <i>Walter D. Welford</i> ,	495	"Snapshot Photography," 520; (g) Thornton-	
ILLUSTRATION.—Portrait Study,		Pickard Shutter, 520; (h) Revival of Minia-	
<i>Photo. Club de Paris</i> .		tures,	521
The Tourists' Paradise, <i>J. Fucus Schnitzhott</i> ,	497	ART NOTES.—(a) Technical Characteristics of	
Lights and Shadows, <i>Chas. Scherhols</i> ,	502	Pictorial Art, 522; (b) Naturalism in Art, 522;	
Inconsistencies of Illustrations,	503	(c) Professional Models, 523; (d) Complement-	
Notes on the Mounting and Framing of Photo-		ary Colors, 524; (e) Photographic Reproduc-	
graphic Pictures, <i>John Scott, M.D.</i> ,	505	tion of Chalk Drawings,	524
Simple Tests for Water,	511	SOCIETY NOTES.—Photographic Society of Phila-	
The Prismatic Camera,	512	delphia,	525
Good Luck in Photography, <i>Clarence B. Moore</i> ,	514	PHOTOGRAPHIC SCISSORS AND PASTE.—(a) Cents	
PHOTOGRAPHIC HINTS AND FORMULÆ.—(a)		are Legal Tender, 526; (b) Disraeli's Lasting	
An Economical Gold Bath, 516; (b) Another		Work, 526; (c) Aluminum and Nickel Alloy, 527	
Method of Preparing Platinotype Paper, 516;		IN THE TWILIGHT HOUR,	528
(c) To Prevent Filling,	517		

Subscriptions received in London, by Triibner & Co., 57 Ludgate Hill.

Agent in Germany, G. Hedeler, Grimmalscher Steinweg 3, Leipzig.

PHILADELPHIA:

THOS. H. McCOLLIN & CO., PUBLISHERS

No. 1030 ARCH STREET.

INDEX TO ADVERTISEMENTS.

ALPHA ARISTOTYPE PAPER,	xiv.
AMERICAN DRY PLATE CO.,	xiii.
ANDERSON, MACFARLANE, Sensitive Enamel,	iv.
ANTHONY, E. & H. T. & Co., Entrek's Burnishers,	xxxii.
ANTHONY, E. & H. T. & Co., "Aristo" Collodion Paper,	4th page of cover.
BARGAIN LIST,	i and ii.
BAUSCH & LOMB OPTICAL CO., Lenses and Shutters,	xix.
BEACON PUBLISHING CO., THE,	xix.
BLITZ-PULVER FLASH-LIGHT,	xxxiv.
BLUE BOOK OF AMATEUR PHOTOGRAPHERS,	xxxv.
BOSTON CAMERA MFG. CO.,	xxxvii.
BOUDROU, PROF. ALEXANDER, Miraculous Remedies,	ix.
BRADFISCH & PIERCE, Aristotype and Matt Surface Papers,	xvi.
BRYANT CO., J. W., Backgrounds,	xxviii.
BUFFALO ARGENTIC PAPER CO.,	xxii.
CANADIAN PHOTOGRAPHIC JOURNAL, THE,	xxxi.
CARBUTT, JOHN, Photographic Plates,	vii.
COLLINS, A. M., MANUFACTURING CO., Photographic Card Stock,	xii.
CRAMER, G., Dry Plate Works,	xviii.
DARLINGTON'S HANDBOOK,	xxvi.
DEXTER SHOE CO.,	xxvi.
DIETZ RUBY LAMP,	xxxv.
DRESDEN PHOTO-PAPER WORKS, Albumen Paper Pensée,	xi.
EASTMAN KODAK CO., Enameled Bromide and Platino-Bromide Papers,	xv.
FRENCH, BENJ. & CO., Lenses,	viii.
GENNERT, C., Photographic Supplies,	ii, xi.
GILBERT E. A., Aristotype Paper,	xliv.
GUNDLACH OPTICAL CO., Lenses,	xii.
HIGGINS, CHAS. M. & CO., Photo Mounter,	xxxi.
HOUGH, FRANKLIN H., Patents,	xxxix.
ILOTYPE COMPANY, Collodion Paper,	3d page of cover.
INTERCHANGEABLE VIEW ALBUMS,	xxvii.
KIRKLAND LITHIUM PAPER CO.,	xxii.
LAVETTE'S PATENT ENVELOPE,	xxxviii.
LONDON CHEMICAL CO., Hale's Photographic Specialties,	xxxix.
MANHATTAN OPTICAL CO., Lenses,	x.
MOREHOUSE MFG. CO., Schaefer Album,	xxiv.
MUNN & CO., Scientific American,	ix.
NEW YORK ARISTOTYPE CO., Photographic Supplies,	vi.
ORTHOSCOPE LENSES,	xxi.
PACIFIC COAST PHOTOGRAPHER,	xvii.
PACKARD BROS., Scenic Productions,	x.
PERFECTION BLUE PRINT PAPER,	xxix.
PHILLIPS & JACOBS, Photographic Chemicals,	xvi.
PHOTO-AMERICAN, THE,	xxviii.
PHOTOGRAM, THE,	v.
PRESS CLAIMS CO., Patents, Pensions, etc.,	ix, xxxvi.
PROSCH MFG. CO., Shutters and Flash Lamps,	xxxv.
RECORD DRY PLATE CO.,	xiii.
ROCHESTER OPTICAL CO., THE "Premo" Camera,	xxiii.
SCOVILL & ADAMS CO., THE, Merck's Pyrogallic Acid,	xx.
SCHERING, E., Pyrogallic Acid Developer,	xxxiii.
SPRAGUE SCHOOL OF LAW,	xxxix.
THORNTON-PICKARD MFG. CO., Time and Instantaneous Shutters,	xxxix.
UNITED STATES ARISTOTYPE CO.,	xiv.
U. S. PHOTO SUPPLY CO.,	v.
WALPOLE DYE AND CHEMICAL CO., Photographic Chemicals,	xxvi.
WESTERN COLLODION PAPER CO. (Killborn & Kurtz),	xxxvii.
WILKINSON CO., THE, Dixie Vignetter,	v.
WILSON, EDWARD L., Photographic Literature,	xiv.

\$2.00 per Year.



25 cts. per Copy.

AMERICAN JOURNAL OF PHOTOGRAPHY

AN ILLUSTRATED MONTHLY
DEVOTED TO PHOTOGRAPHY IN ITS
WIDEST SENSE

Vol. XV.

DECEMBER, 1894.

No. 180.

CONTENTS.

	PAGE		PAGE
FRONTISPIECE.—Nuremberg.		567; (5) The American "Blue Book,"	567;
Commercial Photography, . . . <i>Julius F. Sachs</i> , 529		(7) Stalking with the Camera, 568; (4) More	
Platinochlorides,	533	Color Projection, 568; (1) The Pennsylvania	
The Stability of the Aristotype, <i>J. F. S.</i> 538		Academy of the Fine Arts,	568
Cloud Photographs,	540	SOCIETY NOTES.—Photographic Society of Phila-	
The Anaglyph,	541	delphia, 569; (2) California Camera Club,	
The Grain Weight, <i>J. U. Lloyd</i> , 549		570; (3) Minneapolis Camera Club,	570
A Report from the Committee of Progress in Sci-		Exhibition of Photo-Mechanical Prints,	571
ence and Art,	553	American Color Screens,	571
In Memoriam—Charles Ehmann,	554	PHOTOGRAPHIC HINTS AND FORMULÆ.—(a)	
A Process of Photographing in Colors,	556	A New and Practical Shutter, 573; (2) Ton-	
THE EDITORIAL DROP-SHUTTER.—(a) Our		ing Bromide Prints, 573; (3) Brown Ferro-	
Frontispiece, 564; (2) Professional Flash-		Prussiate Prints, 574; (4) A New Reducer for	
Light Work, 564; (3) The Boston Camera		Dense Negatives, 575; (5) An Intensifier for	
Club, 564; (4) Anaglyphs, 564; (5) A Photo-		Negative Reducing Lines, 575; (7) To	
Stereo Chromoscope, 565; (7) Twenty-third		Change Blue Prints to Black, 575; (8) Black	
Regiment Fair, 566; (8) Color Screens,		Stain for Wood, 575; (4) Black Tones,	575
566; (4) A National Photographic School,		Recent Photographic Patents,	576

Subscriptions received in London, by Tribner & Co., 57 Ludgate Hill,
Agent in Germany, G. Hedeler, Grimmalscher Steinweg 3, Leipzig.

PHILADELPHIA:
THOS. H. MCCOLLIN & CO., PUBLISHERS,
No. 1030 ARCH STREET.

INDEX TO ADVERTISEMENTS.

ALPHA ARISTOTYPE PAPER,	xxv.
AMERICAN DRY PLATE CO.,	xxiii.
ANDERSON, MACFARLANE, Sensitive Enamel,	iv.
ANTHONY, E. & H. T. & Co., Entrek's Burnishers,	xxxii.
ANTHONY, E. & H. T. & Co., "Aristo" Collodion Paper,	4th page of cover.
BARGAIN LIST,	i and ii.
BAUSCH & LOMB OPTICAL CO., Lenses and Shutters,	ix., xix.
BEACON PUBLISHING CO., THE,	xix.
BLITZ-PULVER FLASH-LIGHT,	xxxiv.
BLUE BOOK OF AMATEUR PHOTOGRAPHERS,	xxxv.
BRADFISCH & PIERCE, Aristotype and Matt Surface Papers,	xvi.
BRYANT CO., J. W., Backgrounds,	xxviii.
BUFFALO ARGENTIC PAPER CO.,	xxii.
CANADIAN PHOTOGRAPHIC JOURNAL, THE,	xxxi.
CARBUTT, JOHN, Photographic Plates,	vii.
COLLINS, A. M., MANUFACTURING CO., Photographic Card Stock,	xii.
CRAMER, G., Dry Plate Works,	xviii.
DARLINGTON'S HANDBOOK,	xxvi.
DIETZ RUBY LAMP,	xxxv.
DRESDEN PHOTO-PAPER WORKS, Albumen Paper Pensée,	xl.
EASTMAN KODAK CO., Enameled Bromide and Platino-Bromide Papers,	xv.
FRENCH, BENJ. & CO., Lenses,	viii.
GENNERT, C., Photographic Supplies,	xi.
GILBERT E. A., Aristotype Paper,	xliv.
GUNDLACH OPTICAL CO., Lenses,	xii.
HARRISON & CO., W. P., Electric Telephone,	xxvi.
HIGGINS, CHAS. M. & CO., Photo Mounter,	xxxi.
HOUGH, FRANKLIN H., Patents,	xxxvi.
ILOTYPY COMPANY, Collodion Paper,	3d page of cover.
INTERCHANGEABLE VIEW ALBUMS,	xxvii.
KIRKLAND LITHIUM PAPER CO.,	xxii.
LAVETTE'S PATENT ENVELOPE,	xxxviii.
LONDON CHEMICAL CO., Hale's Photographic Specialties,	xxxvi.
MANHATTAN OPTICAL CO., Lenses,	x.
MERCK & CO., Pyrogallie Acid,	xx.
MOREHOUSE MFG. CO., Schaefer Album,	xxiv.
MUNN & CO., Scientific American,	xxviii.
NEW YORK ARISTOTYPE CO., Photographic Supplies,	vi.
NOLAN, JOHN R., Patent Attorney,	xxvi.
ORTHOSCOPE LENSES,	xxi.
PACIFIC COAST PHOTOGRAPHER,	xvii.
PACKARD BROS., Scenic Productions,	x.
PERFECTION BLUE PRINT PAPER,	xxix.
PHILLIPS & JACOBS, Photographic Chemicals,	xvi.
PHOTOGRAM, THE,	v.
PRESS CLAIMS CO., Patents, Pensions, etc.,	xxviii., xxxvi.
PROSCH MFG. CO., Shutters and Flash Lamps,	xxxv.
RAMSPERGER, H. G. & CO., Photo Specialties,	xxxvii.
RECORD DRY PLATE CO.,	xiii.
ROCHESTER OPTICAL CO., The "Premo" Camera,	xxiii.
SCHERING, E., Pyrogallie Acid Developer,	xxxiii.
SPRAGUE SCHOOL OF LAW,	ix.
SUNART PHOTO CO., Sunart Magazine Camera,	ix.
UNITED STATES ARISTOTYPE CO.,	xiv.
U. S. PHOTO SUPPLY CO.,	v.
WALPOLE DYE AND CHEMICAL CO., Photographic Chemicals,	xxvi.
WESTERN COLLODION PAPER CO. (Killborn & Kurtz),	xxxvii.
WILSON, EDWARD L., Photographic Literature,	xiv.

